## **Gas-Phase Ion and Neutral Thermochemistry**

Journal of

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David R. Lide, Jr., Editor

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## Gas-Phase Ion and Neutral Thermochemistry

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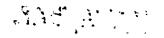
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#### **Foreword**

The Journal of Physical and Chemical Reference Data is published jointly by the American Institute of Physics and the American Chemical Society for the National Bureau of Standards. Its objective is to provide critically evaluated physical and chemical property data, fully documented as to the original sources and the criteria used for evaluation. One of the principal sources of material for the journal is the National Standard Reference Data System (NSRDS), a program coordinated by NBS for the purpose of promoting the compilation and critical evaluation of property data.

The regular issues of the Journal of Physical and Chemical Reference Data are published quarterly and contain compilations and critical data reviews of moderate length. Longer monographs, volumes of collected tables, and other material unsuited to a periodical format are published separately as Supplements to the Journal. This tabulation, "Gas-Phase Ion and Neutral Thermochemistry", by Sharon G. Lias, John E. Bartmess, Joel F. Liebman, John L. Holmes, Rhoda D. Levin, and W. Gary Mallard, is presented as Supplement No. 1 to Volume 17 of the Journal of Physical and Chemical Reference Data.

David R. Lide, Jr., Editor

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Critically evaluated data on heats of formation of positive and negative ions in the gas phase are compiled and presented in these tables (GIANT tables), along with auxiliary information on ionization energies, proton affinities, electron affinities and acidities, as well as relevant thermochemistry of related neutral species. The literature coverage is through the middle of 1986. The criteria used in carrying out evaluations of data are described, and a short discussion is presented of special concerns for the thermochemistry of charged species.

Key words: acidity; anion; basicity; cation; Franck-Condon principle; electron affinity; heats of formation; ion/molecule equilibrium; ionization energy; negative ion; proton affinity.

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#### 1. Introduction

#### 1.1. History

This publication is the direct linear descendant of two earlier compilations of evaluated heats of formation of ions derived from ionization potential and appearance potential data, both carried out under the auspices of the National Bureau of Standards. The first such volume, "Ionization Potentials, Appearance Potentials, and Heats of Formation of Gaseous Positive Ions" by J. L. Franklin, J. G. Dillard, H. M. Rosenstock, J. T. Herron, K. Draxl, and F. H. Field appeared in 1969, and included all data on threshold energies for formation of positive ions which had appeared in the literature through mid-1966. That book, although woefully out-ofdate now, is still occasionally referred to in the mass spectrometric literature, and is one of the most widely cited publications in the history of mass spectrometry. In 1977, H. M. Rosenstock, K. Draxl, B. W. Steiner, and J. T. Herron published an update, "Energetics of Gaseous Ions," which covered the literature through mid-1971<sup>2</sup>; the scope of the work was also extended to cover data on anions. In both of these books, the data for the threshold energies for formation of ions (ionization potentials and appearance potentials) were evaluated where possible, and where thermochemical data for relevant neutral species were available, values for heats of formation of the corresponding ions were derived.

In 1982, two of the present authors published an extensive compilation of *unevaluated* ionization potential and appearance potential data ("Ionization Potential and Appearance Potential Measurements, 1971–1981")<sup>3</sup> which covered the literature from the 1971 cut-off date of the 1977 book through mid-1981.

Since the mid-1970's, much information about ion thermochemistry has been derived from determinations of the equilibrium constants of ion/molecule reactions, a type of data which was not covered in the earlier compilations. Much of the work on equilibria of positive ions involves proton transfer reactions. These data have been compiled and evaluated by some of the present authors<sup>4</sup>.

#### 1.2. Definitions

The heat of formation of a positive ion in the gas phase is obtained by taking the heat of formation of the corresponding neutral species and adding the energy required to remove an electron, the so-called adiabatic ionization potential or, more correctly, the adiabatic ionization energy, IP<sub>a</sub> (sometimes designated IE, or, in the older literature, I):

$$M \stackrel{IP_a}{\rightarrow} M^+ + e \qquad (1)$$

$$\Delta_{f}H(M^{+}) = \Delta_{f}H^{\circ}(M) + IP_{\bullet} - \Delta_{f}H(e)$$
 (2)

As discussed in Sec. 1.6.2., Eq. (2) is rigorously correct only at absolute zero. According to the convention adopted in this work for dealing with the thermochem-

istry of the electron (the "ion convention", sometimes called the "stationary electron convention", see Sec. 1.6.1.) "298 K heats of formation" of positive ions are often derived by simply adding the 0 K value for the ionization energy to the 298 K heat of formation of the molecule. The assumptions inherent in this treatment are discussed in Secs. 1.6.1. and 1.6.2. The user of these tables is cautioned that there is an alternate convention for dealing with the thermochemistry of the electron, which results in numerically different values for heats of formation for ions than those given here; details are discussed in Sec. 1.6.1.

The vertical ionization energy is the energy change corresponding to formation of the ion in a configuration which is effectively the same as that of the equilibrium geometry of the ground state neutral molecule. See Sec. 2.1. for a more complete discussion.

Accepting the simplifications described and justified in Sec. 1.6., determination of the heat of formation of a *molecular ion* is, in principle, straightforward, requiring only a value for the heat of formation of the corresponding neutral molecule and a reliable value for the adiabatic ionization energy. Many positive ions of interest, however, do not have stable neutral molecular counterparts. These include many of the ions which originate by fragmentation of a molecular ion, *fragment ions*:

$$AB^+ \to A^+ + B + e \tag{3}$$

Heats of formation of fragment ions,  $A^+$ , are usually based on mass spectrometric determinations of the energy required to generate the ion from the neutral precursor molecule. This energy is called the "appearance potential" or, more correctly, the "appearance energy", AP:

$$AB \xrightarrow{AP} A^+ + B + e$$
 (4)

In the case that there is no potential barrier in the reaction coordinate, and little or no kinetic shift (see Sec. 2.2.), the onset energy for formation of  $A^+$  corresponds approximately to the enthalpy change of reaction 4. Under these conditions, the heat of formation of  $A^+$  is usually assumed to be given by:

$$\Delta_{f}H(A^{+}) = \Delta_{f}H^{\circ}(AB) - \Delta_{f}H^{\circ}(B) + AP \qquad (5)$$

where, according to the ion convention, the term accounting for the electron has been taken to be zero. For a discussion of a more exact treatment of the energetics of ionic fragmentation processes, see Sec. 1.6.2.

Stable cations formed in the gas phase also include ions formed by protonating a neutral molecule:

$$BH^+ + M \rightarrow MH^+ + B \tag{6}$$

In practice, heats of formation of most protonated molecules are derived from experiments in which the

equilibrium constant of a proton transfer reaction such as 6 is determined (given that a heat of formation of a reference BH<sup>+</sup> ion is available from appearance potential determinations). Formally, the relationship between the heat of formation of MH<sup>+</sup> and its neutral counterpart, M, is defined in terms of a quantity called the *proton affinity*, PA. The proton affinity is the negative of the enthalpy change of the hypothetical protonation reaction:

$$M + H^{+} \stackrel{-PA}{\rightarrow} MH^{+}$$
 (7)

$$\Delta_f H(MH^+) = \Delta_f H^{\circ}(M) + \Delta_f H(H^+) - PA \qquad (8)$$

The term proton affinity, as universally used, is a quantity defined at 298 K (and therefore not strictly analogous to the adiabatic ionization energy, which is the 0 K enthalpy change of reaction 1). (The Gibbs energy change associated with reaction 7 is called the gas basicity, GB, of molecule M.) At 298 K, the heat of formation of the proton, using the ion ("stationary electron") convention, is 365.7 kcal/mol, 1530.0 kJ/mol.

The electron affinity (EA) of a molecule is, for negative ions or anions, the quantity which is analogous to the ionization energy for positive ions. That is, the electron affinity is equal to the energy difference between the heat of formation of a neutral species and the heat of formation of the negative ion of the same structure. The electron affinity is defined as the negative of the 0 K enthalpy change for the electron attachment reaction:

$$M + e \xrightarrow{-EA_a} M^-$$
 (9)

The gas phase acidity (or merely, acidity) of a molecule AH,  $\Delta_{acid}G(AH)$ , is the Gibbs energy change of the reaction:

$$AH \rightarrow A^- + H^+ \tag{10}$$

usually defined at 298 K. The enthalpy change of reaction 10,  $\Delta_{acid}H$ , is, of course, the proton affinity of the anion. The Gibbs energy change of the reaction:

$$AH + B^- \rightarrow BH + A^- \tag{11}$$

is called the relative acidity of species AH and BH.

## 1.3. Scope, Limitations to Coverage, and Organization

The intent of the present effort is to give (a) the "best" available experimentally-determined values for ionization potentials, electron affinities, acidities or proton affinities of molecules or molecular fragments, and (b) the heats of formation of the corresponding positive and negative ions. Also included are values for the heats of formation of the relevant neutral species which were

used to obtain the heats of formation of the ions. Appearance energies are not specifically listed here, although heats of formation of ions derived from such data are given where the accuracy is sufficiently great to warrant inclusion.

In evaluating heats of formation of ions for the present work, all data presented in the previous compilations<sup>1,2,3,4</sup> have been considered, along with data from the more recent literature, 1981–1986. In addition, thermochemical information about ions derived from ion/molecule equilibrium constant determinations has been fully utilized, both in evaluations of ionization potential/appearance potential, proton affinity, acidity, and electron affinity data, and in deriving values for heats of formation of ions for which no other information is available.

Because the values for the heats of formation of ions are, of course, dependent on the larger corpus of thermochemical data on uncharged species, the values for heats of formation of relevant neutral species which were utilized are included as an intrinsic part of the tables.

The user familiar with the previous compilations in this series will note that the format of the present work is considerably different from that of its predecessors. In all three previous volumes, all ionization energy or appearance energy data pertaining to a particular ionic species were displayed, so that the books served as complete summaries and guides to the literature. Because of the increasing volume of such an archive with time, such a display is no longer practical for the positive ion data. Furthermore, because the general quality of mass spectrometric measurements has increased greatly over the last decade, display of some of the now out-of-date early data is no longer even desirable for ionization potentials/appearance potentials.

On the other hand, there has been a tremendous increase in the number of anions for which some thermochemical information is known, and this publication presents the first extensive evaluated compilation of those data. The table of anion thermochemistry (Table 2), therefore, includes both as *complete* a collection as possible of the literature data, and an assignment where possible of the "best" value for the thermochemistry.

Because earlier volumes in this series<sup>1,2</sup> were devoted to deriving values for heats of formation of ions, this work has been defined in the same way. It should be emphasized that in Table 1 (the positive ion table) molecules for which heats of formation are not known or have not been estimated are not included, even if the corresponding ionization energies or proton affinities are known. On the other hand, Table 2 (the negative ion table) presents a complete archive of data on electron affinities and gas phase acidities, whether or not the thermochemistry of relevant neutral species is available; the evaluation of the scale of gas phase acidities will, however, be the subject of a separate publication<sup>5</sup>. The total archive of ionization energy and appearance energy data will be published separately6, as will the updated scales of gas phase basicities/proton affinities'.

Another consequence of defining this work in terms of thermochemical data is that the abundant data on excited states of ions from photoelectron spectroscopy are not included here. The combined bibliographies of this work and its predecessors, however, do include the entire corpus of literature of photoelectron spectroscopy, since values for the *lowest* ionization energy derived from photoelectron experiments are included. Also not included are data on multiply charged ions.

Thermochemical information about ion/molecule clusters has been published in a recent compilation<sup>8</sup>, and is not specifically included here, although some information derived from the enthalpy changes associated with the association of the first solvent molecule have been used in evaluating certain heats of formation.

At this writing, publications are beginning to appear in increasing numbers giving quantum mechanical calculations of very high accuracy on the thermochemical properties of ions, especially small ions<sup>9,10</sup>. The present work includes *only* data derived from experimental determinations. However, conclusions derived from some high level calculations have been taken into account in the evaluation of data for particular species.

The solution phase reduction potentials of a variety of species have been correlated with gas phase electron affinities (EAs), and values for a large number of EAs have been extrapolated from such correlations. More recent determinations of accurate gas phase data have shown that such relationships hold only for limited classes of compounds, so that the solution phase data can be taken only as an approximate guide to predicting electron affinities. Thus, any electron affinity values derived from reduction potentials have been omitted from this compilation. Such values were included in a recent compilation of anion data<sup>11</sup>.

This compilation also does not attempt to cover negative electron affinities — cases where the electron in the highest occupied molecular orbital is unbound (resonance states), and therefore the lifetime of the anion with respect to autodetachment is on the order of microseconds, at most. Electron transmission spectrometry<sup>12</sup> is used to determine thermochemical data for such species. Brief mention is made for certain small molecules and elements for which the anion is known to be unbound, to differentiate from cases for which there is just no data available.

The data on positive ions and on negative ions are not interdependent, and have been evaluated separately. Data on the positive ions were collected and evaluated at the National Bureau of Standards (ionization energies, equilibrium constant data) and the University of Ottawa (appearance energies), while information concerning the negative ions was handled at the University of Tennessee. The data on cations and anions are presented in two separate tables.

Since heats of formation of ions are derived using data on heats of formation of neutral molecules and radicals, data on the thermochemistry of uncharged species are an integral part of this work. Although only experimentally-determined values for heats of formation of neutral species were utilized in the 1977 evaluation, estimation schemes for arriving at thermochemical information are now widely accepted and used. Estimated heats of formation are included for many species for which no experimental data are available. These estimations, and a literature search for thermochemical data not available in compilations, were performed primarily at the University of Maryland, Baltimore County Campus.

#### 1.4. Literature References

With respect to ionization energies, appearance energies, or proton affinities, the present publication gives specific citations only to publications which were not included in the previous compilations<sup>1,2,3,4</sup>. The bibliography includes all references which have appeared since the previous publications<sup>1,2,3,4</sup> even if the data from a particular paper are not given here because of a lack of information about the thermochemistry of relevant neutral molecules. When no literature reference is given for these kinds of data in the positive ion table, it should be assumed that the primary reference can be obtained from the secondary sources, references 1, 2, 3, or 4. When the source of the data on ion thermochemistry is a recent paper which was not included in any of these previous compilations, the reference is specifically cited in a footnote. The literature citations for which a specific column is provided in Table 1 refer only to the source of the data on the thermochemistry of the neutral species.

In Table 2, specific citations are given for the data on both the ion thermochemistry and the relevant neutral thermochemistry.

#### 1.5. Units

Information is displayed in the tables using different units, dictated by the current practices for reporting data of a particular kind. For example, ionization energy and electron affinity values are usually reported in electron volts, and that is the unit used here for these data. Heats of formation of positive ions are given here in both kcal/ mol and kJ/mol. The reason for this duplication is simply that both units are extensively used in the literature, and users of these tables will be about equally divided between those who prefer kilocalories and those who prefer kilojoules. Furthermore, because of the duplication in units, the data can always be displayed as they appeared in the original paper, a practice which helps in elimination of transcribing errors. While the same statements certainly apply to data on negative ions, the amount of information which needs to be displayed in Table 2 is sufficiently great that including the same information twice, in two sets of units, would crowd the page too much; therefore, the negative ion heats of formation and acidities are given only in the SI unit, kJ/mol.

The conversion factors which were used in this work are: 1 electron volt (eV) = 23.06036 kilocalories/mole = 96.4845 kilojoules/mole; 1 kilocalorie/mole = 4.184 kilojoules/mole.

#### 1.6. Ion Thermochemistry at Finite Temperatures

The auxiliary thermochemical information required for citation of ion heats of formation—heats of formation of relevant neutral species—is available mostly for species at 298 K. These thermochemical data are correct for use in deriving ion heats of formation from equilibrium constant determinations, i.e., for treatment of data derived from processes occurring at temperatures other than 0 K. However, strictly speaking, the ionization energy and the electron affinity of a molecule are quantities which correspond to processes occurring at 0 K. As mentioned above in Sec. 1.2., a rigorously correct treatment of heats of formation of ions requires explicit treatment of the differences in thermochemical values at 0 K and at higher temperatures. This section describes the principles involved in such a correct treatment, considers the simplifications which are often made in the literature, and specifies how data have been treated in this work.

#### 1.6.1. Thermochemical Conventions for the Electron

We are concerned with the way in which the enthalpies of formation of the chemical species, M<sup>+</sup> and M<sup>-</sup>, are defined, particularly at temperatures other than 0 K. The enthalpy of formation of any chemical species is always taken as the difference between the enthalpy of the compound and the sum of the enthalpies of the elements of which it is composed. However, in the case of an ion, M<sup>+</sup> or M<sup>-</sup>, a special problem arises—one must explicitly take into account the enthalpy of the electron in some way.

There are two conventions for dealing with the thermochemistry of the electron, one used predominantly by thermodynamicists<sup>13,14,15</sup> and one adopted by scientists studying ion physics/chemistry<sup>16,17</sup>. The thermodynamicists' convention, commonly called the "thermal electron convention" or merely the "electron convention", defines the electron as a standard chemical element and treats its thermochemistry accordingly. The mass spectrometrists' convention, known as the "stationary electron convention" or the "ion convention", defines the electron as a sub-atomic particle. Because of differences in the treatment of the thermochemistry under these two definitions, except at absolute zero values cited for the enthalpies of formation of ions in certain thermochemical compilations such as the JANAF tables<sup>13</sup> or the NBS Tables of Chemical Thermodynamic Properties<sup>14</sup> differ from those cited here, or in most mass spectrometric literature, by 1.481 kcal/mol, 6.197 kJ/mol. Our values are lower for positive ions and higher for negative ions. Problems arise when users unknowingly mix inconsistent values for heats of formation in the same equation.

There is considerable confusion and misunderstanding of the basic assumptions and treatment of the thermochemistry of the electron in the two approaches. Many scientists who regularly use one or the other convention in their work can not clearly explain the differences. Indeed, some hold that the two ways of dealing with the thermochemistry of the electron are not merely two conventions, but two scientifically different concepts, one of which must be incorrect. The discussion which follows is an attempt to present the question of how the electron is treated in a thermochemical equation in as simple and straightforward a manner as possible, in the hope that some of the confusion will be dispelled and the identity of the two treatments as *conventions* will become clear. This discussion is also intended to justify the choice of the usual mass spectrometrists' convention for use in these tables.

The relationships between the various quantities which must be considered are shown in the thermochemical cycles:

$$\begin{array}{cccc} \mathbf{M_{0 K}} & \stackrel{IP}{\longrightarrow} & \mathbf{M^{+}_{0 K}} & + & \mathbf{e_{0 K}} \\ A \downarrow & B \downarrow & C \downarrow \end{array} \tag{12a}$$

$$M_{298 K} \xrightarrow{\Delta H_{\rm I}} M^{+}_{298 K} + e_{298 K}$$
 (12b)

and

$$\begin{array}{cccc} \mathbf{M_{0 K}} & + & \mathbf{e_{0 K}} & \stackrel{-EA}{\longrightarrow} & \mathbf{M^{-}_{0 K}} \\ A \downarrow & & C \downarrow & D \downarrow \end{array} \tag{13a}$$

$$M_{298 K} + e_{298 K} \xrightarrow{\Delta H_{E4}} M_{298 K}^{-}$$
 (13b)

where A, B, C, and D are the integrated heat capacities for the various indicated species, e.g., A is the energy required to raise M from 0 K to 298 K, and  $\Delta H_{\rm I}$  and  $\Delta H_{\rm EA}$  are the 298 K enthalpies of reaction. This discussion will be concerned with the standard temperature, 298 K, but the arguments can obviously be extended to any other temperature.

At 0 K, the heat of formation of the electron is zero and the heats of formation of the ions are exactly equal to the 0 K heat of formation of the molecule M plus the energy difference between M and the corresponding ion:

$$\Delta_{f}H(M^{+})_{0 K} = \Delta_{f}H^{\circ}(M)_{0 K} + IP_{a}$$
 (14)

$$\Delta_{f}H(M^{-})_{0 K} = \Delta_{f}H^{\circ}(M)_{0 K} - EA \qquad (15)$$

At absolute zero, there is no difference between the two conventions.

When the temperature is raised to 298 K, the heats of formation of M<sup>+</sup> and M<sup>-</sup> will be related to the heat of formation of M at 298 K through the enthalpy changes of reactions 12b and 13b:

$$\Delta_{t}H(M^{+})_{298 \text{ K}} = \Delta_{t}H^{\circ}(M)_{298 \text{ K}} - \Delta_{t}H(e)_{298 \text{ K}} + \Delta H_{I}$$
 (16)

$$\Delta_{f}H(M^{-})_{298 K} = \Delta_{f}H^{\circ}(M)_{298 K} + \Delta_{f}H(e)_{298 K} + \Delta_{H_{EA}}$$
(17)

The enthalpy changes of reaction at 298 K are related to the 0 K ionization energy and electron affinity through the relationships:

$$\Delta H_I = IP_a + (C + B - A) \tag{18}$$

$$\Delta H_{EA} = -EA - (C + A - D) \tag{19}$$

If the electron is defined to be a chemical element (the "electron convention"), its heat of formation by definition is zero at all temperatures in its standard state. Thermodynamicists start from this assumption and then make a second one, that an electron gas can be treated as an ideal gas following Boltzmann statistics; this second assumption is used to calculate the integrated heat capacity of the electron, C. In many thermodynamics data compilations, the integrated heat capacity terms for M and the corresponding ion,  $M^+$  or  $M^-$ , are taken to be approximately equal for many ions, i.e. A = B = D. (See Sec. 1.6.2. for a discussion of this assumption.) Under this set of assumptions, Eqs. (16) and (17) can be written:

$$\Delta_{f}H(M^{+})_{298 \text{ K}} = \Delta_{f}H^{\circ}(M)_{298 \text{ K}} + [IP_{a} + C] \qquad (20)$$

$$\Delta_{f}H(M^{-})_{298 \text{ K}} = \Delta_{f}H^{\circ}(M)_{298 \text{ K}} - [EA - C]$$
 (21)

(where the term  $\Delta_t H(e)_{298 \text{ K}}$  has been taken to be equal to zero and the quantity in brackets is the assumed enthalpy change of reaction at 298 K). What most often causes confusion for non-thermodynamicists is the de facto assignment of the integrated heat capacity of the electron, C, to the ion  $M^+$  or  $M^-$ , rather than to the electron in going from 0 K to 298 K. This is required if the heat of formation of the electron is constrained to be zero at all temperatures. It is questionable whether an ion is any more "ideal" than an electron, due to the Coulombic forces between the particles, but this assignment is a necessity if the original assumptions are carried through the argument.

In contrast, the standard treatment of ion heats of formation followed in almost the entire corpus of literature on ion physics/chemistry essentially assumes that:

$$\Delta_{f}H(M^{+})_{298 \text{ K}} = \Delta_{f}H^{\circ}(M)_{298 \text{ K}} + [IP_{a} + B - A](22)$$

$$\Delta_{\rm f} H({\rm M}^-)_{298 \text{ K}} = \Delta_{\rm f} H^{\circ}({\rm M})_{298 \text{ K}} + [-EA - A + D] (23)$$

(where the expressions in brackets are assumed to be equal to the enthalpy change of reaction at 298 K, and the quantities A, B, and D are often, but not always, taken to be equal). Since this is equivalent to taking a value of zero for the integrated heat capacity of the electron (the term C in Eqs. (18) and (19)), this way of treating the thermochemistry of the electron has come to be known as the "stationary electron" convention. The use of this term has unfortunately led to the widespread conception that this convention defines the ionization process as producing an electron which has no thermal energy at 298 K. Since this is not the case, it is preferable

to choose another designation for the convention. In this publication we will adopt the term originally suggested by Syverud<sup>18</sup> for the mass spectrometrists' convention, "ion convention".

At 298 K, the integrated heat capacity of an ideal Boltzmann gas is 1.481 kcal/mol, 6.197 kJ/mol. The relationship between 298 K heats of formation of ions in the ion convention (IC) and the thermodynamicists' convention (TC) is:

$$\Delta_{\rm f} H({\rm M}^+)_{\rm 298 K}({\rm IC}) = \Delta_{\rm f} H({\rm M}^+)_{\rm 298 K}({\rm TC}) - 6.197 \,{\rm kJ/mol}$$
 (24)

$$\Delta_t H(M^-)_{298 \text{ K}}(IC) = \Delta_t H(M^-)_{298 \text{ K}}(TC) + 6.197 \text{ kJ/mol}$$
 (25)

Table 1.6.1.1. summarizes the assumptions made in the two conventions and the data compilations where they are used.

TABLE 1.6.1.1. Summary of assumptions about electron thermochemistry in data compilations.

Convention	Convention Includes $H_T - H_0$ for Species:						
	Compilation	M	M <sup>+</sup> or M <sup>-</sup>	е	Value of C, kJ/mol		
Thermal electron	JANAF Tables <sup>13</sup>	Yes	Yes*	Yes	6.197		
Thermal electron	Gurvich et al <sup>15</sup>	Yes*	Yes*	Yes	6.197		
Thermal electron (Modified)	TN270 <sup>14</sup>	No	No	Yes	6.197		
Ion convention	This work, Refs. 1-4	Yes*	Yes*	No	0		
Ion convention	Some papers	No	No	No	0		

When sufficient information is available. See discussion in Sec. 1.6.2.

The objection has been made that the mass spectrometrists' convention is scientifically incorrect because the electron actually does have thermal energy at 298 K. Note, however, that the values derived in the mass spectrometrists' convention for the heats of formation of the ions are numerically identical to those one would obtain if one assigned the thermal energy of the electron to the electron rather than to the enthalpy of formation of the accompanying ion (as is done in the thermodynamicists' convention). That is, in Eqs. (16) and (17) if one assigns a value of C to  $\Delta_t H(e)_{298 \text{ K}}$  and takes the value for the enthalpy change of reaction from Eqs. (18) and (19), one obtains:

$$\Delta_t H(M^+)_{298 K} = \Delta_t H^{\circ}(M)_{298 K} - C + IP_a + (C + B - A)$$
 (26)

$$\Delta_{t}H(M^{-})_{298 K} = \Delta_{t}H^{\circ}(M)_{298 K} + C - EA - (C + A - D)$$
 (27)

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which are identical to expressions 22 and 23. Although this is a nonstandard treatment, it is possible to justify using a special convention for the thermochemical properties of the electron, since this species is not normally considered to be a chemical element; a stronger justification is found by considering that the use of the standard treatment for an element in this case results in heats of formation for a large body of molecular species — ions — which reflect an arbitrary temperature dependence which can not be experimentally measured or verified at the present time.

In fact, the mass spectrometrists' convention for treating the electron was not derived from a conscious treatment of the electron as having a non-zero heat of formation at 298 K. Indeed, earlier discussions of this convention<sup>16,17,18</sup> have centered mainly on the reluctance to assign a purely arbitrary temperature dependence to ionization or electron attachment events and a recognition that absolute values of the various parameters,  $\Delta H_{\rm I}$ ,  $\Delta H_{E, \bullet}$  B, D, and especially C were not available. The enthalpy changes of reactions 12b and 13b are not directly measured by any currently-available experimental techniques, and can not be said to be known within ±6.197 kJ/mol. As will be discussed below, accurate values for the integrated heat capacities of ions M<sup>+</sup> and M<sup>-</sup> are not available except for a few small species, and the assumption that (B - A) and (A - D) are exactly equal to zero is often not warranted (see Sec. 1.6.2.). Most important, however, the value chosen for the integrated heat capacity of the electron, C, is completely arbitrary. To quote from the 1985 edition of the JANAF thermochemical tables<sup>13c</sup>:

"As shown by Sommerfeld<sup>19</sup>, the electron gas is a degenerate Fermi-Dirac gas and its properties will differ from the classical (Boltzmann) gas. These deviations will increase as the temperature decreases or as the density increases. Due to the low mass of the electron, these departures from classical behavior will persist to higher temperatures and lower densities than for atomic systems. Under conditions of 1 atm pressure, Gordon<sup>20</sup> showed that the deviation of the Fermi-Dirac gas from the Boltzmann gas is negligible above 1250 K. Below this temperature the deviation between classical and quantum statistics will be significant.

Despite these known deviations we have chosen to present the classical (Boltzmann) values here since the primary purpose of this table is to serve as a reference state for the calculation of tables of thermodynamic properties for atomic and molecular ions..... Therefore, although this ideal-gas table has the formalism of 1 bar as the standard reference state, it should not be applied to real systems where the electron partial pressure exceeds  $10^{-6}$  bar."

That is, the authors of the JANAF tables<sup>13</sup> recognize that the standard thermodynamicists' convention for dealing with the electron does involve a completely arbitrary assumption about the value assigned to the enthalpy of the electron (as does the mass spectrometrists'

convention when expressed by Eqs. (22) and (23)—but not in the assumptions built into the equivalent Eqs. (26) and (27)). Syverud<sup>18</sup>, in an unpublished discussion of conventions for treating the thermochemical properties of the electron, cites a value of approximately 3.3 kJ/mol, 0.8 kcal/mol for the value of C derived from a quantum chemical calculation (source not quoted). Furthermore, while the rationale for the thermodynamicists' convention is that the values "correspond to a meaningful thermal process"<sup>21</sup>, the use of that convention is excluded for a substantial set of possible thermal conditions.

The mass spectrometrists' approach to the problem recognizes that the specific inclusion of the term for the enthalpy of the electron in deriving ion heats of formation is not physically meaningful if it is based on the assumption that an electron gas can be treated like an ideal gas. In fact, at this time neither the enthalpy changes of reactions 12b and 13b nor the enthalpy of the electron are established; a solution is to adopt a convention (the "ion convention") which sidesteps the problem, that is, in which the enthalpy change of reaction and the enthalpy of the electron need not be known or assumed. If, in the future, information about the integrated heat capacities of the electron and the ions does become available, the values for heats of formation of ions can be fine-tuned; however, in the meantime, there is no real problem with using data in the present form as long as internal consistency is maintained.

It will be noted that in the tables, the symbol  $\Delta_t H$  rather than  $\Delta_t H^{\circ}$  is used to denote the standard heats of formation of the ions. This convention has been adopted here to emphasize that the heats of formation are referred to the ion convention rather than the electron convention used by thermodynamicists.

#### 1.6.2. Thermochemistry of Positive Ions at Finite Temperatures

Molecular ions. Using the ion convention (also known as the stationary electron convention, see Sec. 1.6.1.) the heat of formation of molecular ion  $M^+$  at temperature T can be defined in terms of the heat of formation of the corresponding neutral species, M, at temperature T, and a quantity labelled  $\Delta H_{\rm I}$ , the gas phase enthalpy change of ionization, which represents the energy required to bring about ionization at temperature T:

$$\Delta_{f}H(M^{+})_{T} = \Delta_{f}H^{\circ}(M)_{T} + \Delta H_{I}$$
 (28)

In applying Eq. (28), the value for  $\Delta H_{\rm I}$  is usually taken to be exactly equal to the adiabatic ionization potential. Although the use of the ion convention obviates the necessity of assigning an exact value to the increase in the ionization energy at temperature T due to energy imparted to the electron, the assumption that  $\Delta H_{\rm I}$  is the same as  $IP_{\rm a}$  is still not correct. The adiabatic ionization energy of a molecule is the energy difference between the lowest rotational and vibrational levels of the ground

state of the molecule and the lowest rotational and vibrational levels of the electronic ground state of the ion, i.e., the difference between the heats of formation of the molecule and the corresponding ion at absolute zero. The adiabatic ionization energy—the quantity obtained from analysis of a Rydberg series (Sec. 2.3.1.) or from determinations of an ionization onset energy (Sec. 2.3.3.) — is a measure of the  $0 \rightarrow 0$  transition, and does not depend on the temperature at which the determination is made.

However, it is a common practice to derive "298 K heats of formation" of positive ions by simply adding the 0 K value for the ionization energy to the 298 K heat of formation of the molecule. This practice probably gains impetus from the fact that much of the available thermochemical data for chemical compounds (particularly for organic and other large polyatomic compounds) correspond to values for heats of formation at 298 K.

The relationship between the enthalpy change associated with ionization at temperature T,  $\Delta H_{\rm I}$ , and the adiabatic ionization energy is shown in thermochemical cycle 12, and given explicitly in Eq. 18. When using the ion convention for dealing with thermochemistry of the electron (Sec. 1.6.1.), the integrated heat capacity of the electron (the quantity C in the cycle) can be ignored, and the relationship between the adiabatic ionization energy and the enthalpy change of ionization at temperature T is given by:

$$\Delta H_{\rm I} = IP_{\rm a} + B - A \tag{29}$$

That is,  $IP_a$  and  $\Delta H_I$  are the same only when the integrated heat capacities of the neutral molecule, M, and the ion, M<sup>+</sup>, are identical over this temperature range. An analysis<sup>22</sup> of the differences between integrated heat capacities of M and M+ for various molecules demonstrated that (a) there will be no discernable differences between the translational and rotational heat capacities of M and M<sup>+</sup>, (b) that differences arising from a splitting of degenerate energy levels in multiplet ground states of M or M+ will never be larger than 0.009 eV at temperatures in the 300-400 K range, and (c) when the frequency of a particular vibration changes upon ionization, there will be a difference between the integrated heat capacities of M and M<sup>+</sup>. However, even this contribution will usually be sufficiently small that a significant error will not be introduced if it is ignored. For example, the lowest ionization energy of ethylene corresponds to removal of an electron from the C-C pi bond, which leads to a lowering of the frequency of the symmetric C-C stretch from 1623 to 1230 cm<sup>-1</sup> and a reduction in the frequency of the twisting around the C-C bond from 1027 to 430 cm<sup>-1</sup>. Although these differences in vibrational frequencies are significant, the predicted effect on the 298 K enthalpy of ionization is to raise it above the value for the adiabatic ionization potential by only 0.0069 eV, i.e. only the most accurate experimental measurements would detect an increment of this size. Thus for most species, the simplifying assumption that the adiabatic ionization energy and the 298 K enthalpy of ionization,  $\Delta H_1$ , are approximately the same:

$$IP_{\rm a} \sim \Delta H_{\rm I}$$
 (30)

will not introduce significant errors in the 298 K heats of formation of molecular radical cations.

In this compilation, most values of heats of formation of molecular ions correspond to 298 K. Most of these were obtained by simply adding the value for the adiabatic ionization energy to the 298 K heat of formation of the neutral species, that is, the assumption stated in Eq. (30) was usually made. Of course, a rigorously correct treatment would require calculating exact values for integrated heat capacities A and B from complete sets of vibrational frequencies for the molecule and the ion. This complete procedure has been applied to only a few of the species listed in this compilation. Vibrational frequencies for most of the ions are not available, and the correction would simply cancel out if one made the often-used assumption that the vibrational frequencies of the ion and its neutral counterpart are the same. Whenever the original authors carried out such a complete analysis (a routine procedure only for photoelectron-photoion coincidence studies), the results of that analysis are included here, and both 0 K and 298 K values for the ion heat of formation are given. In addition, for those diatomic and triatomic and other small molecules for which values for the 0 K heats of formation as well as the vibrational frequencies of the molecule<sup>23</sup> and the ion<sup>24</sup> were readily available, the heats of formation of the ion at absolute zero and at 298 K were derived by the more correct procedure. In the course of this work, we did not, however, carry out a comprehensive literature search for sets of vibrational frequencies, but only made use of readily available compilations<sup>23,24</sup>.

Fragment ions. Analogous arguments can be applied to the use of appearance energies for the derivation of heats of formation of fragment ions,  $A^+$ , at temperature T in Eq. (5). If there are no complicating factors (see Sec. 2.2.), the appearance energy, AP, corresponds to the enthalpy change for the fragmentation reaction 4, and can be used to derive a value for the heat of formation of the fragment ion,  $A^+$ . Correctly, a 0 K heat of formation of  $A^+$  must be obtained using 0 K heats of formation of AB and B in the calculation, and this heat of formation can then be corrected to some other temperature, T, taking into account the vibrational frequencies of the ion and appropriate thermodynamic functions of the elements.

For the most common experimental techniques (energy selected electron impact, photoionization mass spectroscopy, etc.) for measuring the appearance energy of a fragment ion starting from a molecule or radical at temperature, T, the major problem is to identify the internal energies of the reaction products. This matter has been discussed at length by Traeger and McLaughlin<sup>25</sup>. At onset the products of the unimolecular decomposition will be formed with zero translational energy with respect to the center of mass (provided that the fragmenta-

tion does not involve a reverse energy barrier) and a center of mass translational energy the same as that of the precursor molecule. The products thus are at a translational quasi-temperature,  $T^*$ . In principle, if the observational time scale of the experiment and the sensitivity of the ion detector are great enough, then the observed appearance energy approaches that for products having 0 K internal energy (i.e., all internal energy modes have contributed to reaching the transition state). Traeger and McLaughlin<sup>25</sup> showed that for the molecule AB:

$$AP_T(\exp) = \Delta_t H[A^+ + B + e]_T - \Delta_t H^{\circ}[AB]_T + 5/2RT - \int C_p[A^+ + B + e]dT$$
 (31)

In effect, this equation corrects the observed threshold energy for the fragmentation process to an effective 0 K value by adding the thermal rotational and vibrational energy contained in AB to the onset.

Most heats of formation of fragment ions are derived making the simplifying assumption that the last two terms of Eq. (31) will cancel one another. That is, values for heats of formation of fragment ions at 298 K derived from appearance potential data are more often obtained by simply using an observed onset energy and 298 K heats of formation of relevant neutral species in Eq. (5). When such a value for a heat of formation has been reported in the literature, the value is given here as it appeared in the original paper, with only the imposed requirement that the thermochemistry of the relevant neutral species employed must be internally consistent with the values of those species used in this publication. Where the original authors have used a more sophisticated analysis, such as that represented by Eq. (31), or that routinely used in the interpretation of photoelectron-photoion data, both 0 K and 298 K values of the ion are cited. The user should be cautioned that the 298 K value assigned to a heat of formation of a fragment ion may differ by as much as 3 or 4 kcal/mol, 12-18 kJ/mol, depending on which of these treatments has been used. For example, Baer and Brand<sup>26</sup>, and Lossing<sup>27</sup> determined the appearance energies for formation of C<sub>4</sub>H<sub>7</sub>+ ions in C<sub>5</sub>H<sub>10</sub> isomers. Although the appearance energies reported in the two studies were almost identical, the 298 K values for heats of formation of the C<sub>4</sub>H<sub>7</sub><sup>+</sup> ions derived by Baer and Brand<sup>26</sup>, using a complete treatment of the temperature dependence of the heat of formation, are higher than the values derived by Lossing<sup>27</sup> by 4.3 kcal/mol, 18 kJ/mol.

#### 1.6.3. Thermochemistry of Negative Ions at Finite Temperatures

The electron affinity is a quantity which is analogous to the ionization energy. That is, the electron affinity is a 0 K quantity which corresponds to the transition from the ground state of the neutral species to the ground state of the anion. Thus, the heat of formation of an anion at 298 K can not rigorously be taken as the heat of formation of the corresponding neutral species (298 K) minus the (positive) electron affinity (0 K) without some

estimate of the temperature dependence of the electron affinity. Although the use of the ion convention ("stationary electron" convention) allows one to ignore the integrated heat capacity of the electron, a term for correcting for the integrated heat capacity of the anion from 0 K to 298 K is required. Statistical mechanics permits a calculation of this quantity if the structure and vibrational frequencies of the anion are known. However, at present the necessary data are not readily available for most anions, and therefore this correction is generally ignored in this work.

Under the assumption that the temperature dependence of the electron affinity and that of the ionization energy of the H atom are equal, one can relate the (298 K) gas phase acidity, Eq. (10), to the (0 K) electron affinity:

$$\Delta_{\text{acid}}H(AH) = D(A-H) - EA_{0K}(A) + IP_{0K}(H)$$
 (32)

There is not extensive data on the validity of this assumption, although it appears to hold<sup>13</sup> to  $\pm 2$  kJ/mol for Cl<sup>-</sup> and OH<sup>-</sup>.

#### 2. Positive lons

In the discussion which follows, a brief description of the Franck-Condon principle along with a discussion of the implications for an analysis of data obtained from experimental determinations of ionization energies will be given in Sec. 2.1. In Sec. 2.2., special problems in the interpretation of appearance potential data will be summarized, followed in Sec. 2.3. by short descriptions of the various experimental techniques used in obtaining the data given here, with attention to intrinsic experimental problems which may affect the reliability of data. Section 2.4. will give a discussion of the rationale used in evaluating ionization energy and appearance energy data from the various approaches, and a description of the conventions and symbols used in the tables. Finally, Sec. 2.5. summarizes a few of the regular trends observed in the data, and describes schemes for estimating data on heats of formation of positive ions.

Detailed discussions of the ionization process and of the experimental techniques used in studying ion chemistry, as well as of thermodynamics, are available in many books and reviews. Therefore, no attempt will be made to present a comprehensive discussion or review of these subjects. Rather, attention will be given only to those aspects which have a bearing on the evaluation of data on ionization energies, appearance energies, or ion/ molecule equilibrium constants.

## 2.1. The Evaluation of Experimentally-Determined Ionization Energies:

#### The Franck-Condon Principle

Ionization of a molecule by photoionization or by electron impact is governed by the Franck-Condon prin-

ciple, which states that the most probable ionizing transition will be that in which the positions and momenta of the nuclei are unchanged<sup>28,29</sup>. Thus, when the equilibrium geometries of an ion and its corresponding neutral species are closely similar, the energy dependence of the onset of ionization will be a sharp step function leading to the ion vibrational ground state. However, when the equilibrium geometry of the ion involves a significant change in one or more bond lengths/angles from that of the neutral species, the transition to the lowest vibrational level of the ion is no longer the most intense, and the maximum transition probability (the vertical ionization energy) will favor population of a higher vibrational level of the ion; if the geometry change is great, it is possible that the transition to the lowest vibrational level of the ion will not even be observed. These situations are illustrated for hypothetical diatomic species in Fig. 1.

In evaluating ionization energy data, the shapes of photoelectron bands are useful indicators as to which of the situations pictured in Fig. 1 prevails for the particular molecule. A sharp onset indicates that the equilibrium geometries of ion and neutral are quite similar, and that photoionization or electron impact determinations of the ionization threshold are likely to be free of complications. When an ionization process proceeds according to the second situation pictured in the figure, the *onset* of the photoelectron band is observed approximately at the adiabatic ionization energy; adiabatic ionization energies derived from observation of the onsets of photoelectron bands are usually in excellent agreement with adiabatic ionization energies obtained from analyses of Rydberg series or from the most reliable threshold determinations.

When the equilibrium geometry of the ion is very different from that of the corresponding neutral molecule and the lowest vibrational level is not populated in ionization by photon absorption or electron impact, it has been shown that values for the adiabatic ionization energies can be obtained by determining the equilibrium constant for charge transfer to another molecule of known ionization energy:

$$A^+ + B \rightleftharpoons B^+ + A \tag{33}$$

The enthalpy change for this reaction, which (Sec. 2.3.5.) is obtained from the equilibrium constant determination, is just the difference between the enthalpies of ionization,  $\Delta H_{\rm I}$ , of species A and B. As shown above (Sec. 1.6.) this difference is likely to be quite close to the difference in the adiabatic ionization energies:

$$\Delta H(33) = [\Delta H_{\rm I}(B) - \Delta H_{\rm I}(A)] \sim [IP_{\rm a}(B) - IP_{\rm a}(A)]$$
(34)

In such determinations, the ions are at thermal equilibrium with their surroundings, and one measures the thermochemical properties of the ions in their equilibrium geometries.

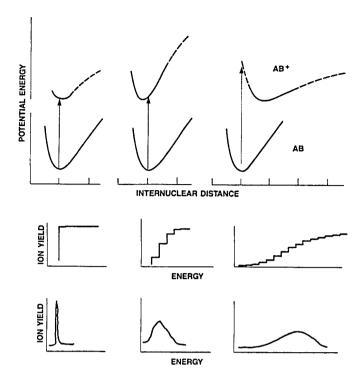


Fig. 1. Potential energy curves for hypothetical diatomic molecule AB, and the corresponding positive ion, AB+ for the cases in which the equilibrium internuclear distance is (a) the same, (b) slightly different, or (c) greatly different. Below the potential energy curves are hypothetical probabilities for ionization as a function of energy for cases (a), (b), and (c), and, at bottom, shapes of observed photoelectron bands for the three corresponding cases.

#### 2.2. Interpretation of Appearance Energies

In the discussion above, the appearance energy for formation of a fragment ion (reaction 4) was defined, and Eqs. (5) and (31), for obtaining values for the heat of formation of the fragment ion, were derived, with the proviso that the equations were valid only when there is no potential barrier in the reaction coordinate, and no significant "kinetic shift" associated with the determination.

The "kinetic shift" 2,30,31 is the term applied to describe the experimental observation of ionization onsets which are higher than the thermodynamic onset energy due to the fact that the apparatus samples the (fragmenting) ions at a certain time (usually around 10<sup>-5</sup> s) after ionization has occurred, when ions undergoing a slow fragmentation process have not yet had time to dissociate. One approach for getting around this problem is an analysis based on the determination of the so-called rate-energy curve for a given fragmentation, in which the rate constant of the dissociating ion is derived as a function of energy. This kind of information is derived by analysis of the data from an elegant technique which is, moreover, capable of delivering very accurate thermochemical information for fragmentation processes, photoelectronphotoion coincidence spectroscopy (PEPICO)32. Another approach to detecting a barrier in the reaction

coordinate is the determination of the kinetic energy carried off by the fragment ion. Studies of metastable peaks, for example, permit such an evaluation<sup>33</sup>.

#### 2.3. Experimental Techniques

The 1977 evaluated compilation included an extensive review of the experimental techniques which provide ionization energy and appearance energy data, along with a detailed description of how the data derived from each type of experiment are interpreted to give ionization energies<sup>2,31</sup>. Although technological advances have been made in mass spectrometric instrumentation since that review was written, the detailed presentation given there is still recommended reading for anyone interested in an in-depth description of the basic principles of the various approaches. For the present purposes, it will suffice to summarize briefly the different types of experiments from which the data presented here originate, and to give some general indications of the strengths and limitations of the different techniques, and how these influence the evaluator in arriving at a recommended value for an ionization energy.

#### 2.3.1. Optical Spectroscopy

The identification of a Rydberg series in an atomic or molecular spectrum leads to a value for the ionization energy; in cases where the analysis of the spectrum is straightforward, the spectroscopic ionization energy values are highly accurate. The determination of atomic ionization energies through optical spectroscopy is a highly developed field which has been extensively reviewed. A large fraction of atomic ionization energies listed here are from expert evaluations of atomic spectra<sup>34</sup>. In the evaluation of ionization energies of atoms and diatomic molecules, spectroscopic ionization energies have been chosen where they are available. For polyatomic species, a value derived from an analysis of the optical spectrum has been given great weight, unless several determinations from other highly reliable techniques are in conflict with the spectroscopic value. As pointed out by Rosenstock<sup>2,31</sup>, the evaluation of molecular Rydberg series is not always straightforward, and reported spectroscopic ionization energies of polyatomic species may disagree with values derived from ionization onset determinations or the onsets of photoelectron bands due to complications in the analysis of vibrational and rotational structure.

#### 2.3.2. Beam Studies Involving Laser Photolonization

In the years since the cut-off date of the literature search for the previous volume of this series<sup>2</sup>, several highly accurate ionization energy values have been reported based on multi-photon ionization of vibrationally-cooled species in a molecular beam<sup>35</sup>. In these studies, a vibrationally and rotationally cooled beam of molecules

is raised to a specific excited state by irradiation with a tunable laser; while this excitation energy is held constant, a second independently tunable laser is used to ionize the beam of excited molecules, with the photon energy being tuned through the ionization onset. The excitation laser is then tuned to a different transition, and the ionization scan is repeated. In this way, the entire Franck-Condon accessible region of the intermediate electronic state is mapped out, insuring that the molecular geometry corresponding to the adiabatic ionization energy is accessed. Since every intermediate vibronic state leads to an independent value of the ionization threshold, the experiment contains an internal consistency check.

## 2.3.3. Determination of Ionization/Appearance Energies by Threshold Techniques

In the several techniques which fall under this heading, the onset of ionization or of the appearance of a particular fragment ion is detected as a function of the energy of the ionizing agent, either photons or an electron beam. The most obvious problem which must be considered with regard to this technique is the accurate characterization of the energy of the ionizing medium, photons or electrons. When ionization is brought about by photon absorption, this is usually not a problem; monochromators capable of delivering photons with a high energy resolution are available. The most sophisticated photoionization experiments involve detection of energy-selected electrons; in the so-called "threshold photoelectron spectroscopy" technique, only those photoelectrons which correspond to essentially zero energy of ejection are detected.

In the past, many experimental determinations of ionization onsets were carried out in instruments in which ionization was effected by bombarding the sample of interest with an electron beam in which the electrons had a known energy. This technique, called "electron ionization" or in the older literature, "electron impact", resulted in many determinations which were unreliable because of the energy spread of the electrons in a conventional beam. Several approaches have been utilized to overcome this problem; the most successful has been the use of a so-called "electron monochromator", in which the energy of the electron beam is narrowly defined by passing the beam through electron energy selectors of various designs<sup>31,36,37,38,39</sup>. Results obtained using electron beams with well-defined energies are in excellent agreement with analogous results derived from determinations of photoionization thresholds. At this writing, reliable data on ion thermochemistry are being obtained from experiments of this sort. Although studies are still being published which report ionization energy and appearance energy data from less accurate electron ionization techniques, the intent of the authors of those studies is rarely to examine the thermochemistry of the ionization process.

In the powerful threshold technique known as photoelectron-photoion coincidence (PEPICO)32, the thermochemistry and detailed mechanism of an ionic fragmentation process can be mapped out very accurately. Ejected electrons which originated with "zero" kinetic energy are matched with their corresponding positive ions. At energies where parent ions, M<sup>+</sup>, are undergoing dissociation to form one or more fragment ions, one obtains the relative probabilities for the formation of the daughter ions from parent ions of known energy (i.e. the breakdown curve). The ions can be detected at differing times after the ionization event for the determination of the time dependence of the dissociation process. The complete interpretation of such data requires a modeling of the dissociation using statistical theories of unimolecular decomposition (i.e. quasi-equilibrium/RRKM theory)40,41. As pointed out by Dannacher in a recent review<sup>32</sup>, in spite of its great strengths, this technique has not been widely utilized, possibly because of the intricate instrumentation required, the complexity of the data analysis, and the fact that each determination requires the investment of a great amount of time on the part of the experimentalist.

To summarize, intrinsic problems associated with threshold determinations of ionization energies are: a) the difficulty of detecting the onset when there is a large change of molecular geometry in the ionization process, as discussed in Sec. 2.1.; and, b) the observation of ionization at energies below the adiabatic ionization energy when there is a significant population of vibrationally excited molecules in the system ("hot bands").

#### 2.3.4. Photoelectron Spectroscopy

It is also possible to determine the energy change associated with ionization process 1 by effecting ionization with a photon of well-defined energy and measuring the energy of the ejected electrons:

$$M + h\nu \rightarrow M^+ + e \tag{35}$$

where

$$KE(e) = h\nu - I - E*(vib,rot)$$
 (36)

(where  $E^*$ (vib,rot) is the internal energy of  $M^+$  and I is the binding energy of the electron).

The most widely-used technique of this type is conventional photoelectron spectroscopy<sup>42</sup> in which the photon sources are usually the helium resonance lines of 58.4331 nm (21.218 eV) or 30.3781 nm (40.813 eV); some work is done with neon resonance lines (73.589 nm and 74.370 nm, 16.848 and 16.671 eV) or other intense monochromatic sources. In such an experiment, the ejected electrons will have differing energies depending on the distribution of energy levels in the  $M^+$  ions formed; a map of the abundances of the electron as a function of energy is called the photoelectron spectrum. As described in Sec. 2.1., the shapes of the photoelectron bands will reflect not only the energy differences in the different states of  $M^+$  but the  $M \rightarrow M^+$  transition proba-

bilities as governed by the Franck-Condon principle. In cases where the equilibrium geometry of the ion and the corresponding neutral are the same or are similar, it is found that the observed onset of the first photoelectron band is usually a reliable indicator of the adiabatic ionization potential (see Fig. 1).

#### 2.3.5. Ion/Molecule Equilibrium Constant Determinations

This evaluation takes into account (although previous works in the series did not) all information on ion thermochemistry generated by ion/molecule equilibrium constant determinations.

An ion/molecule equilibrium:

$$A^{+} + B \rightleftharpoons C^{+} + D \tag{37}$$

is established in a high pressure mass spectrometer<sup>43</sup>, flow tube<sup>44</sup>, or ion cyclotron resonance spectrometer<sup>45</sup>, and the equilibrium constant is determined by observing the relative abundances of the two ions, A<sup>+</sup> and C<sup>+</sup>, after a large number of collisions:

$$K_{eq} = \frac{[C^+][D]}{[A^+][B]}$$
 (38)

The neutral reactants, B and D, are present in great abundance compared to the ionic reactants, and therefore, the ratio [D]/[B] does not change as equilibrium is established. A single measurement leads to a value for the Gibbs energy change of reaction 37 at the temperature of the measurement, while a series of measurements at different temperatures permits an experimental evaluation of the entropy and enthalpy changes associated with the reaction:

$$-RT \ln K_{eq} = \Delta G = \Delta H - T\Delta S \tag{39}$$

In practice, many studies have been published in which measurements were made at a single temperature, the (usually small) entropy change for the reaction was estimated from statistical mechanical considerations (usually just from consideration of changes in symmetry numbers), and the corresponding enthalpy change was derived from these two pieces of information.

Published ion/molecule equilibrium studies involving cations provide data on charge transfer (reaction 33), proton transfer (reaction 6), and hydride or halide transfer equilibria:

$$R_1^+ + R_2 X \rightleftharpoons R_2^+ + R_1 X \tag{40}$$

(where X is H, F, Cl, Br, or I). Studies of hydride transfer and halide transfer equilibria have led to quantitative information about the relative heats of formation of alkyl carbocations. These data were used to supplement information from appearance potential determinations in evaluating heats of formation of alkyl carbocations.

Most ion/molecule equilibrium studies involving positive ions have been devoted to the derivation of an extensive (more than 100 kcal/mol in length) scale of relative proton affinities (see Eqs. (7) and (8)). The results were mainly derived from interlocking ladders of enthalpy changes for reaction 6. These data have recently been evaluated to establish internal consistency<sup>4</sup>. Most of the values for heats of formation of protonated molecules given in this evaluation are taken from that publication. When this is the case, no specific literature reference is given, it being understood that the source is the evaluated compilation<sup>4</sup>.

As noted above (reaction 33), in determinations of charge transfer equilibrium constants, the difference in the ionization energies of two reacting molecules is obtained. A thermochemical ladder of relative ionization energies determined in this way<sup>22</sup> closely reproduces the equivalent scale of spectroscopic ionization energies, thus demonstrating the reliability of the approach for deriving information on relative ionization energies. The most useful application of this approach for ionization energy data has proved to be the determination of ionization energies for species which undergo a large change of geometry upon ionization (case 3 in Fig. 1), and which therefore exhibit very slow onsets of ionization as a function of energy. For example, the only reliable data on the adiabatic ionization energies of n-alkanes<sup>46</sup> and of alkyl hydrazines<sup>47,48</sup> come from thermochemical ladders established through equilibrium constant determinations.

The main uncertainty associated with this technique, aside from the necessity of relating the thermochemical ladder to a reliable comparison standard, is the temperature of the reacting system. However, the reproduction of relative spectroscopic ionization energies through equilibrium measurements<sup>22</sup> demonstrates that this is not a serious problem.

#### 2.3.6. Ion/Molecule Bracketing Experiments

There are some ion/molecule systems for which an equilibrium can not be established in an ion source, either because one of the relevant neutral species is unstable (e.g. a radical or unstable molecule) or because of competing reactions in the system. In such cases, it is sometimes possible to obtain an experimental estimate of the enthalpy change of a particular reaction (charge transfer, proton transfer, hydride transfer, etc.) by use of a technique known as "bracketing" in which the ion of interest is reacted with a series of molecules chosen for variations in the relevant thermochemical parameter (proton affinity, ionization energy, etc.). The occurrence, and sometimes the rate constant, of reaction is monitored as a function of the parameter of interest; the approximate onset energy is usually assumed to lie on the energy scale at a point where the rate of reaction becomes very slow. Few data in this work are derived from such measurements, but in cases where heats of

formation are derived from this kind of experiment, a specific comment describes the experiment.

#### 2.3.7. Onsets of Endothermic Reactions

Several pieces of data given here have been derived from an analysis of the enthalpy changes of endothermic ion/molecule reactions. Although some such information has been obtained from straightforward kinetic treatments (Arrhenius plots) of the temperature dependences of the rate constants of endothermic ion/molecule reactions<sup>49,50</sup> recent quantitative studies<sup>51,52,53</sup> cover a much broader energy range by generating a beam of energy- and mass-selected ions which is focussed into a collision chamber containing the reactant gas; product ions are detected as a function of the energy of the ions in the beam.

#### 2.3.8. Other Techniques

Essentially all of the ionization potentials and heats of formation of positive ions included in this evaluation have been derived from results obtained using the experimental approaches listed above. Several additional tech-(Auger electron spectroscopy, Penning ionization, Born-Haber cycle calculations, and analyses of so-called charge transfer spectra) were described in the Introduction to the 1977 compilation<sup>2,31</sup> but are not widely used for the quantitative determination of data of interest to this compilation. Such data, when available, have been taken into account in the evaluation, except for ionization energies derived from charge transfer spectra. The latter technique is mainly used for obtaining values for ionization potentials of compounds of low vapor pressure. Since the cut-off date for inclusion of literature in the 1977 volume, numerous quantitative determinations of ionization energies for such species, mainly by photoelectron spectroscopy or by ion/ molecule equilibrium constant determinations, have appeared in the literature. These have made the charge transfer spectra data obsolete for many species. Since it is generally seen that the gas phase ionization potentials derived from charge transfer spectra may be very inaccurate, all these data have been ignored in the present volume.

## 2.4. Reliability of Ionization Energy Data and Criteria for Evaluation

#### 2.4.1. Comparisons between Results of Different Techniques

The data on ionization energies summarized here are derived from the different types of measurements described above, and are consequently of widely varying quality, not only because the accuracies of the measurement techniques differ, but also because of differences in the focusses of the research in which the measurements were made. For example, many of the ionization energies reported for inorganic species were never intended by the original authors to be quantitative ionization

energy measurements, but are simply qualitative indicators of whether or not a given ion observed in the vapor over a heated Knudsen cell has been formed by electron impact ionization of the corresponding neutral species (in which case it exhibits an onset at a relatively low energy) or through fragmentation of a molecular ion (which would correspond to a higher onset energy). In these experiments, error limits of 0.5 to 1 eV are commonly cited by the original authors. Similarly, most photoelectron spectroscopic studies are carried out for the purpose of examining molecular orbital energy levels; thermochemistry is not a concern, and often, although the accuracy of the measurements is very high, only vertical ionization energies, which are not necessarily related to thermochemical onsets, are reported.

Because many of the values for ionization energies given here are derived from evaluations of several different determinations carried out using different techniques, there is no specific indication in Table 1 of an experimental method associated with a particular value. In carrying out the evaluation, an attempt was made to integrate the entire corpus of information about any given ion, giving weight to various determinations depending on the nature of the ionization onset, the measurement techniques used, the attention to detail by the original authors, and so forth. Usually (but not always) a spectroscopically-determined ionization energy was considered more reliable than a contradictory value obtained by observation of an ionization threshold. A value obtained from an observed ionization onset using photoionization or an electron monochromator was considered more reliable than an onset obtained using less accurate techniques. In all of these cases, an observed onset of a photoelectron band was given great weight in carrying out the analysis, with values from any of the above three techniques being downgraded if they did not match the photoelectron onset (unless, of course, the differences could be rationalized in terms of the principles outlined above).

As mentioned above, many photoelectron spectroscopy studies do not cite values for adiabatic ionization potentials. In these cases, where the authors have provided a figure showing the photoelectron spectrum, it is usually possible to estimate from the figure the value for the adiabatic onset; where adiabatic ionization energies have been obtained in this way, a specific comment to that effect is made.

Data derived from ion/molecule equilibrium constant determinations have been utilized as an aid in evaluating information obtained from other sources. For example, where scales of relative ionization energies were available from equilibrium constant determinations, internal consistency with these scales was required in the assigned ionization energy or heat of formation values. Where this was not possible, a specific comment spells out the discrepancy. As described in Sec. 2.3.5., ionization energy values derived from equilibrium constant determinations provide the only values for ionization energies of species which undergo large changes of ge-

ometry upon ionization such as normal alkanes with six or more C-atoms<sup>46</sup>, or hydrazines<sup>47,48</sup>. When an ionization energy has been obtained solely from this approach, the source of the data is indicated in a comment, and the identity of the reference compound is given.

Heats of formation of protonated molecules derived from the evaluated proton affinity scale<sup>4</sup> are taken from that publication. More recent data are included, with the internal consistency requirement rigorously maintained. The value for the corresponding proton affinity of the molecule is given in a comment. Note that to locate a value for a proton affinity, one must look under the empirical formula of the corresponding protonated molecule, i.e. the proton affinity of methane is located by looking under CH<sub>3</sub>. When data from recent publications are given, the literature source is specifically cited.

#### 2.4.2. Reliability of Data; Error Limits

Ionization Energies. The experimentally-determined ionization energies collected here display widely varying uncertainties, ranging from  $\pm 0.0001$  eV or smaller for some spectroscopic or multiphoton-laser determinations to  $\pm 1$  eV for measurements carried out on the vapor above a heated Knudsen cell. The error limits associated with a particular ionization energy are specifically listed when the original work(s) gave an estimate of this quantity. In other cases, the error limits are indicated by the number of significant figures displayed; in these cases, it can be assumed that the error limits are five times the last significant figure displayed.

Some of the ionization energy values are shown enclosed in parentheses. Data enclosed in parentheses are considered not to be firmly established for one of three reasons:

- (1) The measurement itself must be considered unreliable (as in, for example, threshold determinations in which the energy spread of the electrons was not well defined).
- (2) The relevant ionization energy has been determined more than once but with poor agreement between the different results, and there is no auxiliary information available which allows a choice between the divergent values. In such cases, the evaluation gives either (a) the value determined by the most reliable technique, or (b) an average of two or more values determined by the same technique, with error limits indicating the scatter in the data. In a very few cases where the scatter in the reported values is very great or where the value obtained by the "most reliable" technique appears to be specious, no evaluated ionization energy is cited, but a note is included which lists the various determined values.
- (3) Parentheses are also used to indicate data which are unevaluated. That is, when a particular molecule has been studied only once, and additional information which would permit one to judge the reliability of the data is unavailable, the ionization energy is given exactly as it appears in the original reference but is enclosed in

parentheses. Many of these untested determinations are undoubtedly reliable; the cited error limits and the number of significant figures shown in the table will give an indication of the probable reliability of the technique by which such a value was obtained.

As described above, some ionization energy values were obtained by reading onsets of photoelectron bands in figures reproduced in papers, where the original authors did not assign a numerical value to the band onset. In every such case, a specific comment is made indicating that the value has been derived from a figure. The accuracy with which such onsets can be read should be assumed to be not better than 0.1–0.2 eV, except where the authors have given an enlarged view of the band onset, in which case, an additional significant figure is cited. When a figure was not given, the lowest vertical ionization potential from the original paper is cited as the upper limit to the adiabatic ionization energy.

Heats of Formation. The cited heats of formation of ions necessarily reflect both the uncertainties in the ionization (or appearance) energy values and the uncertainties in the heats of formation of the relevant neutral species. Values of ionic heats of formation which are not firmly established - either because of a poorly established ionization/appearance energy or because of large uncertainties in the heat of formation of the neutral species - are shown enclosed in parentheses.

Although the values which were used for heats of formation of neutral species will be discussed separately in Sec. 4, it should be emphasized here that many of these data are based on estimates. Some of the estimation schemes for particular classes of compounds are sophisticated and well-documented, and can be considered to lead to values for heats of formation which are as reliable as most experimental data. Other estimations have been carried out by various authors with varying degrees of attention to complexities, or in some cases, with little or no documentation about how the estimate was accomplished. A large fraction of the estimates used were made specifically for this publication, and even among this fraction, there is a broad spectrum of quality depending on the size of the network of related information which was available. Rather than try to sort out and make judgments about the quality of each estimate of the heat of formation of a neutral molecule, the policy has been followed of enclosing in parentheses each ion heat of formation based on an estimated value for the heat of formation of relevant neutral molecules or radicals; this practice is not meant to disparage the quality of the estimated data, but simply to alert the reader to the fact that it is being used. As a first approximation, the user can assume that the reliability of an estimate varies inversely with the complexity of the molecule.

#### 2.5. Trends in the Data

#### 2.5.1. Estimation Schemes for Heats of Formation of Cations

Within the past few years, a sufficient amount of reliable information on ionization energies and heats of for-

mation of many classes of positive ions has become available so that regular trends as a function of molecular size and structure can be discerned. These can be used to develop empirical schemes for estimating ionization energies and/or heats of formation of cations. Since ionization energies for a homologous series do not have a linear dependence on molecular size, values for heats of formation of ions can not be reproduced satisfactorily by simple additivity systems like those in widespread use for the prediction of thermochemical data for neutral molecules. The predictive schemes put forward to date utilize equations which are empirical.

One series of several papers<sup>54,55,56,57</sup> presents a scheme which is designed to predict values for the heat of formation of positive ions at 298 K from equations of the form:

$$\Delta_{\rm f}H({\rm M}^+) = A - Bn + C/n \tag{41}$$

where A, B, and C are constants derived from the data for any particular series, and n is the total number of atoms in the molecule. The parameters derived in the paper of Holmes, Fingas, and Lossing<sup>54</sup> for predicting heats of formation of the parent ions of several common classes of compounds are listed in Table 2.5.1.1.

This method works because to an excellent approximation, the ionization energies of a homologous series vary linearly as  $n^{-1}$ , as expressed in the term C/n in Eq. (41). The other two terms, A and Bn, reflect the additive nature of heats of formation of neutral molecules. Also, for molecules in which there is multiple substitution by characteristic groups on charge-bearing atoms or at the position of charge delocalized pi-electron systems, good straight-line relationships exist between ionic heats of formation and the logarithm of the number of atoms (i.e. ion size). Such correlations permit reasonably accurate estimates of ion enthalpies of formation  $^{54,55,56,57}$ .

Bachiri, Mouvier, Carlier, and DuBois<sup>58</sup> have advanced a scheme for the estimation of ionization energies of alkenes, alkynes, aldehydes, ketones, alcohols, ethers, mercaptans, and thioethers. Their empirical equation takes the form:

$$\log_{10} \frac{IP(R_1XR_2) - IP_{\infty}}{IP_0 - IP_{\infty}} = 0.106[I(R_1) + I(R_2)]$$
 (42)

where X is a functional group (i.e. -CH=CH- or  $>C=CH_2$  for alkenes, -O- for alcohols and ethers, >C=O for aldehydes and ketones, etc.),  $R_1$  and  $R_2$  are the attached alkyl groups,  $IP_0$  is the ionization potential of the reference compound for which  $R_1=R_2=H$ .  $IP_{\infty}$  in Eq. (42) is a constant for each compound type. (A modification of this scheme which does away with the need for the parameter  $IP_{\infty}$  has also been put forward recently<sup>59</sup>). Table 2.5.1.2. lists the constants for the alkyl substituent groups and the different compound types (modified slightly from the values given in the original publication to predict adiabatic rather than vertical ionization energies).

TABLE 2.5.1.1. Estimation scheme<sup>c</sup> of Holmes, Fingas, and Lossing<sup>54</sup>:  $\Delta_r H(M^+) \text{kcal/mol} = A - Bn + C/n$ 

	kcal/mol*			
Compound Type	A	В	C	Correction Terms
Alkanes	224	2.2	298	For each branch: -3
1-Alkenes	231.6	1.61	110	For each branch on C-2: -13
				For each remote branch: -2.5
x-Alkenes	219.6	1.61	110	For each branch on $=$ C: $-13$
				For each branch elsewhere: $-2.5$
				One cis correction: +1
				Two cis corrections at one double bond: +3
				If one group is t-butyl: +4
				If both groups are t-butyl: +10
1-Alkynes	278	1.57	110	For each branch: -4
2-Alkynes	260	1.58	110	For each branch: -4
3-Alkynes	257	1.57	110	For each branch: -4
4-Alkynes	257	1.57	110	For each branch: -4
5-Alkynes	256	1.57	110	For each branch: -4
Alkanols	175	1.59	216	For each branch adjacent to -OH: -6
				For each branch elsewhere: -2
Aliphatic ethers	157	1.41	368	For each branch adjacent to $-0-:$ -6
•				For each branch elsewhere: -3
				<sup>b</sup> Asymmetry correction per carbon: +1
Aliphatic	188	1.65	135	For each branch adjacent to C=0: -5
•				For each branch elsewhere: -3
Aliphatic ketones	166	1.78	252	For each branch adjacent to $C=OD: -3.5$
-				<sup>b</sup> Asymmetry correction per carbon: +1.5
Alkanoic acids	142	1.90	112	For each branch adjacent to $C=0$ : $-3.5$
				For each branch elsewhere: -1.5
Chloroalkanes	236	1.98	57	For each branch adjacent to halogen: -5
				For each branch elsewhere: -3
Bromoalkanes	219	1.40	115	For each branch adjacent to halogen: -5
				For each branch elsewhere: -3
Iodoalkanes	222	1.69	44	For each branch adjacent to halogen: -5

<sup>\*</sup>Constants are given here in the units used in the original paper<sup>54</sup>.

A comparison of ionization energy values<sup>58</sup> or heats of formation of cations<sup>54</sup> predicted from expressions 41 or 42 with the corresponding evaluated experimental values is given in Table 2.5.1.3. For both predictive schemes, the agreement between estimated values and experiment is generally quite good — good enough to inspire confidence in the use of the equations for filling in blanks in the data series.

As pointed out in one of the papers advancing these empirical estimation schemes<sup>54</sup> the equations are "not only useful for predicting new  $\Delta_t H$  values, but also for revealing misfits which could indicate incorrect values for  $\Delta_t H$ ° (Neutral) or the ionization energy, or, more interestingly, an ion structure having special stabilizing or destabilizing properties." In fact, the trends described by these equations were routinely examined in evaluating the data for just these reasons.

### 2.5.2. Correlations of ionization Energies with Proton Affinities or Substituent Constants

The proton affinity of molecule M, defined by Eq. 7, is equal to the M-H<sup>+</sup> bond energy of the MH<sup>+</sup> ion. The

 $M^+$ -H bond energy is called the *hydrogen affinity* (HA) of  $M^+$ :

$$M^{+} + H \xrightarrow{-HA} MH^{+}$$
 (43)

Consider the thermodynamic cycle, constructed from reactions 7 and 43:

$$M + H^{+} \xrightarrow{-PA} MH^{+}$$

$$\downarrow IP(M) \downarrow -IP(H) \downarrow \qquad (44)$$

$$M^{+} + H \xrightarrow{-HA} MH^{+}$$

From cycle 44 we write:

$$PA(M) = HA(M^{+}) + IP(H) - IP(M)$$
  
=  $HA(M^{+}) + 13.6 \text{ eV} - IP(M)$  (45)

If the hydrogen affinity were a constant for a given compound type, the proton affinity values would vary linearly with the ionization potentials for a homologous

bAsymmetry correction for ethers and ketones having different numbers of C-atoms on either side of the functional group is based on the smallest numbers of C-atoms which must be transferred to give the most symmetrical species, e.g. for methyl pentyl ketone, +3 kcal/mol.

<sup>&</sup>lt;sup>c</sup>n is the total number of atoms in the molecule.

TABLE 2.5 1.2 Estimation scheme of Bachiri, Mouvier, Carlier, and DuBois<sup>58</sup>:  $\log_{10} \frac{IP(R_1XR_2) - IP_{\infty}}{IP_0 - IP_{\infty}} = 0.106[I(R_1) + I(R_2)]$ 

χ	Κ	IP <sub>0</sub> (eV)	IP <sub>∞</sub> (eV)
-C≃C-	(Alkynes)	11.400	6.577
-HC=CH-	(Alkenes)	10.507	6.849
$>C=CH_2$	(Alkenes, gem)	10.737	6.814
-(C=O)-H	(Aldehydes except CH <sub>2</sub> O)	12.063	3.575
>C=O	(Ketones)	13.334	3.936
-OH	(Alcohols)	12.607	(3.7)
-O-	(Ethers)	12.612	5.483
-S-	(H <sub>2</sub> S, Thiols, Thioethers)	10.473	5.725
	R	I	
 	H	0 (Convention)	
	Methyl	1 (Convention)	
	Ethyl	1.166	
	n-Propyl	1.271	
	i-Propyl	1.291	
	n-Butyl	1.330	
	s-Butyl	1.400	
	ı-Butyl	1.358	
	t-Butyl	1.394	
	n-Pentyl	1.340	
	i-Pentyl	1.389	
	neo-Pentyl	1.369	
	t-Pentyl	1.479	
	s-Pentyl [-CH(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> ]	1.462	
	n-Hexyl	1.355	
	t-Hexyl [-C(CH <sub>3</sub> ) <sub>2</sub> (n-C <sub>3</sub> H <sub>7</sub> )]	1.524	
	t-Hexyl [-C(CH <sub>3</sub> ) <sub>2</sub> (i-C <sub>3</sub> H <sub>7</sub> )]	1.570	
	neo-Hexyl [-CH2CH2C(CH3)3]	1.360	

TABLE 2.5 1 3. Comparison of ionization energies/heats of formation with estimated values predicted from estimation schemes<sup>a</sup>

			Holme	es et al. 54		i <i>et al</i> . <sup>58</sup>
Compound	$\frac{IP}{(eV)}$	$\frac{\Delta_l H/(Ion)}{(kJ/mol)}$	$\frac{IP}{(eV)}$	$\frac{\Delta_t H(\text{Ion})}{(\text{kJ/mol})}$	$\frac{IP}{(eV)}$	$\frac{\Delta_t H(\text{Ion})}{(\text{kJ/mol})}$
Alkynes						
CH <sub>3</sub> C≅CH	10.36	1186	[10.34]	1184	10.36	[1184]
$C_2H_5C=CH$	10.178	1147	[10.13]	1142	10.21	[1151]
$n-C_3H_7C=CH$	10.05	1113	[10.04]	1113	10.11	[1121]
n-C <sub>4</sub> H <sub>9</sub> C==CH	(9.95)	(1079)	[10.02]	1088	10.06	[1092]
n-C <sub>3</sub> H <sub>11</sub> C=CH	(10.04)	(1071)	[ 9.93]	1063	10.06	[1075]
$n-C_6H_{13}C=CH$	(9.95)	(1038)	[ 9.93]	1038	10.04	[1046]
ı-C₃H₁C≡CH	9.97	1096	[ 9.95]	1096	10.10	[1109]
$i-C_3H_7C=CCH_3$	9.31	996	[ 9.32]	996	9.33	[ 996]
t-C₄H <sub>9</sub> C≡CH	(9.80)	(1050)	[ 9.80]	1050	10.01	[1071]
CH <sub>3</sub> C≔CCH <sub>3</sub>	9.562	1068	[ 9.55]	1067	9.54	[1067]
$C_2H_3C=CCH_3$	9.44	1038	[ 9.43]	1038	9.42	[1038]
n-C <sub>3</sub> H <sub>7</sub> C≡CCH <sub>3</sub>	9.366	1013	[ 9.37]	1013	9.35	[1013]
n-C <sub>4</sub> H <sub>9</sub> C==CCH <sub>3</sub>	(9.33)	(983)	[ 9.37]	987	9.31	[ 983]
n-C <sub>5</sub> H <sub>11</sub> C=CCH <sub>3</sub>	9.31	962	[ 9.32]	962	9.30	[ 958]
n-C <sub>6</sub> H <sub>11</sub> C=CCH <sub>3</sub>	(9.30)	(941)	[ 9.28]	941	9.29	[ 941]
$C_2H_5C=CC_2H_5$	9.323	1004	[ 9.28]	1000	9.31	[1004]
$n-C_3H_7C = C_2H_5$	(9.26)	975)	[ 9.24]	975	9.24	[ 975]
$n-C_4H_9C=CC_2H_5$	9.22	954	[ 9.19]	950	9.20	[ 950]
$n-C_3H_{11}C=CC_2H_3$	9.20	929	[ 9.19]	929	9.19	[ 929]
$n-C_6H_{13}C=CC_2H_5$	9.19	908	[ 9.19]	908	9.18	[ 908]

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TABLE 2.5.1.3. Comparison of ionization energies/heats of formation with estimated values\* — Continued

				es et al. 54	Bachir	et al. <sup>58</sup>
Compound	<u>IP</u>	$\Delta_{\rm f}H/({\rm Ion})$	<u>IP</u>	$\Delta_l H(Ion)$	<u>IP</u>	$\Delta_{\rm f}H({ m Ion})$
	(eV)	(kJ/mol)	(eV)	(kJ/mol)	(eV)	(kJ/mol)
Alkenes						
CH <sub>3</sub> CH=CH <sub>2</sub>	9.73	958	[ 9.73]	958	9.71	[958]
$C_2H_5CH=CH_2$	9.58	925	[ 9.59]	925	9.60	[925]
$n-C_3H_7CH=CH_2$	9.52	895	[ 9.54]	900	9.53	[895]
$n-C_4H_9CH=CH_2$	9.44	870	[ 9.48]	874	9.49	[874]
n-C <sub>5</sub> H <sub>11</sub> CH=CH <sub>2</sub>	9.44	849	[ 9.45]	849	9.49	[853]
n-C <sub>6</sub> H <sub>13</sub> CH=CH <sub>2</sub>	9.43	828	[ 9.41]	828	9.48	[833]
$i-C_3H_7CH=CH_2$ $t-C_4H_9CH=CH_2$	8.96 9.45	812	[ 8.94]	812	8.92	[808]
$(C_2H_5)_2C=CH_2$	9.45 9.06	849 820	[ 9.43] [ 9.06]	853 820	9.45	[853]
E-CH <sub>3</sub> CH=CHCH <sub>3</sub>	9.100	866	[ 9.12]	820 866	9.03 9.09	[816]
E-C <sub>2</sub> H <sub>3</sub> CH=CHCH <sub>3</sub>	9.036	840	[ 9.05]	841	9.09	[866] [837]
E-n-C <sub>3</sub> H <sub>2</sub> CH=CHCH <sub>3</sub>	(8.97)	(812)	[ 8.99]	816	8.95	[812]
1-C <sub>3</sub> H <sub>7</sub> CH=CHCH <sub>3</sub>	8.97	803	[ 8.96]	803	8.94	[803]
$E/Z-n-C_4H_9CH=CHCH_3$	(8.84)	(782)	[ 8.92]	791	8.92	[791]
E-n-C <sub>5</sub> H <sub>11</sub> CH=CHCH <sub>3</sub>	8.85	757	[ 8.97]	766	8.91	[761]
$C_2H_3CH=CHC_2H_5$	8.96	812	[ 8.94]	812	8.92	[808]
$(CH_3)_2C = C(CH_3)_2$	8.27	728	[ 8.04]	707	8.23	[724]
Alcohols						
CH <sub>3</sub> OH	10.85	845	[10.82]	845	10.68	[828]
C₁H₃OH	10.47	774	[10.45]	774	10.40	[770]
n-C <sub>3</sub> H <sub>7</sub> OH	10.22	732	[10.20]	728	10.23	[732]
n-C <sub>4</sub> H <sub>9</sub> OH	10.06	695	[10.03]	695	10.14	<sup>[</sup> 703]
n-C <sub>5</sub> H <sub>11</sub> OH	10.00	669	[ 9.96]	661	10.12	[678]
n-C <sub>6</sub> H <sub>13</sub> OH	(9.89)	(640)	[ 9.86]	636	10.10	[661]
i-C <sub>3</sub> H <sub>7</sub> OH	10.12	703	[10.10]	703	10.20	[711]
s-C <sub>4</sub> H <sub>9</sub> OH	9.88	661	[ 9.96]	669	10.03	[674]
i-C <sub>4</sub> H <sub>9</sub> OH t-C <sub>4</sub> H <sub>9</sub> OH	10.09 9.97	690 648	[10.03]	686	10.09	[690]
t-C4H9OH	9.97	048	[9.90]	644	10.09	[661]
Ethers						
CH <sub>3</sub> OCH <sub>3</sub>	10.025	782	[ 9.94]	774	9.86	[766]
C <sub>2</sub> H <sub>5</sub> OCH <sub>3</sub>	9.72	720	[ 9.77]	715	9.69	[717]
n-C <sub>3</sub> H <sub>7</sub> OCH <sub>3</sub>	(0.40)		9.58		0.46	56603
i-C <sub>3</sub> H <sub>7</sub> OCH <sub>3</sub> n-C <sub>4</sub> H <sub>9</sub> OCH <sub>3</sub>	(9.42) (9.54)	657 (661)	[ 9.41] [ 9.32]	657 640	9.56	[669]
n-C <sub>3</sub> H <sub>7</sub> OC <sub>2</sub> H <sub>5</sub>	(9.45)	(640)	[ 9.46]	640	9.52 9.42	[661] [636]
C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>	9.51	665	[ 9.56]	669	9.52	[665]
n-C <sub>4</sub> H <sub>9</sub> OC <sub>2</sub> H <sub>5</sub>	9.36	611	[ 9.36]	611	9.36	[611]
t-C <sub>4</sub> H <sub>9</sub> OCH <sub>3</sub>	9.41	619	[ 9.26]	602	9.46	[623]
Aldehydes						
CH <sub>3</sub> CHO	10.229	821	[10.21]	820	10.23	[820]
C <sub>2</sub> H <sub>3</sub> CHO	9.953	773	[ 9.97]	774	9.96	[820] [774]
n-C <sub>3</sub> H <sub>7</sub> CHO	9.84	741	[ 9.82]	741	9.80	[736]
n-C <sub>4</sub> H <sub>9</sub> CHO	9.74	711	[ 9.76]	711	9.71	[707]
n-C <sub>5</sub> H <sub>11</sub> CHO	9.67	686	[ 9.66]	685	9.69	[688]
i-C <sub>3</sub> H <sub>7</sub> CHO	9.705	721	[ 9.69]	719	9.77	[727]
i-C₄H₀CHO	9.70	699	[ 9.71]	700	9.67	[695]
s-C <sub>4</sub> H <sub>9</sub> CHO	(9.59)	(690)	[ 9.58]	690	9.61	[692]
t-C₄H₀CHO neo-C₃H₁₁CHO	9.50 (9.61)	674 (661)	[ 9.45] [ 9.61]	669 661	9.62 9.65	[686] [665]
Votonos			- <b>.</b>			
Ketones						
CH <sub>1</sub> COCH <sub>1</sub>	9.705	719	[ 9.77]	724	9.704	[761]
C <sub>2</sub> H <sub>3</sub> COCH <sub>3</sub>	9.51	678	[ 9.53]	680	9.48	[675]
n-C <sub>3</sub> H <sub>7</sub> COCH <sub>3</sub>	9.38	644	[ 9.40]	646	9.33	[639]
n-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub> C <sub>2</sub> H <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>	9.35 9.31	628 640	[ 9.26]	619 642	9.26	[619]
22130002115	7.31	U <del>4</del> U	[ 9.32]	642	9.26	[636]

TABLE 2.5.1.3. Comparison of ionization energies/heats of formation with estimated values\* -- Continued

Compound			Holmes et al. 54		Bachiri et al. 58	
	$\frac{IP}{(eV)}$	$\frac{\Delta_l H/(Ion)}{(kJ/mol)}$	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f} H({ m Ion})}{({ m kJ/mol})}$	$\frac{IP}{(eV)}$	$\frac{\Delta_t H(\text{Ion})}{(\text{kJ/mol})}$
Ketones - Continued						
n-C <sub>3</sub> H <sub>7</sub> COC <sub>2</sub> H <sub>5</sub>	9.12	598	[ 9.25]	611	9.12	[598]
n-C <sub>4</sub> H <sub>9</sub> COC <sub>2</sub> H <sub>5</sub>	(9.02)	(573)	[ 9.14]	586	9.05	[577]
i-C <sub>3</sub> H <sub>7</sub> COCH <sub>3</sub>	9.30	636	[ 9.21]	628	9.31	[636]
i-C <sub>3</sub> H <sub>7</sub> COC <sub>2</sub> H <sub>5</sub>	(9.10)	(594)	[ 9.15]	598	9.10	[590]
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> CO	8 95	552	[ 8.92]	548	8.94	[552]
s-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.21	598	[ 9.24]	602	9.17	[594]
1-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.30	607	[ 9.43]	619	9.22	[602]
t-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.11	590	[ 9.14]	590	9.17	[594]
neo-C <sub>5</sub> H <sub>11</sub> COCH <sub>3</sub>	(9.23)	(573)	[ 9.29]	577	9.21	[569]

<sup>\*</sup>In these lists, values obtained through the use of the estimation scheme of Holmes et al<sup>58</sup> are heats of formation of ions at 298 K. The scheme of Bachin et al<sup>58</sup> predicts ionization energies. For purposes of comparison, both quantities are given here, the conversion being made using standard heats of formation of corresponding neutral molecules from Table 1. The derived quantity is enclosed in brackets. Parentheses indicate a quantity which is not well established (see conventions for Table 1).

series, the slope of the plot would be -1 and the intercept would be  $[HA(M^+) + 13.6 \text{ eV}]$ .

It has been observed 45a,60,61 that the value which can be assigned to the M+-H bond strength (i.e. the HA) is indeed often approximately constant for a homologous series, at least over a limited range. For instance, it was reported<sup>62</sup> that linear plots of PA versus IP for primary, secondary, and tertiary amines display the same slope, but have different intercepts (i.e. different values of HA). However, a detailed statistical analysis<sup>63</sup> of the relationships between proton affinities and ionization potentials for many different compound types (alcohols, ethers, primary-, secondary- and tertiary-amines, nitriles, mercaptans, sulfides, aldehydes, ketones, carboxylic acids, esters, amides, and atoms) demonstrated that only the parent radical cations of sulfides and mercaptans displayed a characteristic (constant) value of the hydrogen affinity. For other compound types, it was concluded that the hydrogen affinity itself varies linearly with the ionization energy:

$$HA(M^+) = c + \Delta IP(M)$$
 (46)

Several series of compounds for which reliable evaluated ionization energy and proton affinity data are both available are summarized in Table 2.5.2.1. along with values for the hydrogen affinities. The published analysis utilized vertical ionization energies corresponding to the orbital of the site of protonation, and a proton affinity scale which, although internally consistent, was constricted in length (due to the incorrect assumption in early equilibrium studies using ICR that the operating temperature was 300 K rather than 320 K) and related to an absolute standard whose proton affinity value has now been revised downward by 3 kcal/mol. Repeating that statistical analysis, but using instead the thermochemically more meaningful adiabatic ionization energies which relate to the M\*-H bond strengths, and the

evaluated scale of proton affinities<sup>4</sup>, it is seen that Eq. (46) does hold for alcohols, aldehydes, ketones, primary amines, cyclic ethers and esters. In the series of aliphatic ethers, thioethers, and secondary and tertiary amines, values of the hydrogen affinity appear to decrease slightly with decreasing ionization energy, but the differences are too small to be meaningful (i.e. the slope of a plot of Eq. (46) is -0.7 or greater), and the assumption that the hydrogen affinity is constant will be approximately valid. The hydrogen affinities of mercaptans and of aromatic amines are indeed constant. Substituting Eq. (46) into Eq. (45), we derive an expression which permits the estimation of an unknown proton affinity/ionization energy when one of these two parameters is known:

$$PA_1 - PA_2 = (d-1)(IP_1 - IP_2) = K(IP_1 - IP_2)$$
 (47)

where K = (d-1) is the slope of a plot of PA versus IP for a compound series:

$$PA_{x} = C + KIP_{x} \tag{48}$$

Values for C and K derived from the statistical analysis of the data are given in Table 2.5.2.1. for those compound types for which sufficient information was available to make a meaningful analysis.

Attention has also been given to relating ionization energies and proton affinities of various series of compounds to the appropriate Taft substituent constants  $^{64,65,66,67}$ . It has been shown that the adiabatic ionization energies of compounds RX (where R is an alkyl group) correlate linearly with  $\sigma^*(R)$  and  $\sigma_I(R)$  (measures of the polarizability and electron-releasing and donating ability of R) for constant electron-withdrawing group X. This is easily understood in terms of a lowering of the energy required to remove an electron with increasing electron-donating ability of the groups, R.

TABLE 2.5.2.1 The relationship between proton affinity, ionization energy, and hydrogen affinity for homologous series

$$PA(M) = C + K \cdot IP(M)$$
  
 $HA(M^{+}) = c + d \cdot IP(M)$   
 $(C - c = 1312 \text{ kJ/mol}, d - K = 1.00)$ 

	kJ/mol		
	IP	PA	HA
Alcohols: $K = -0.54$ , $C = 1335 \text{ kJ/mol}$			, , , , , , , , , , , , , , , , , , ,
СН <sub>3</sub> ОН	1047	761	404
C <sub>2</sub> H <sub>3</sub> OH	1010	761	494
n-C <sub>3</sub> H <sub>7</sub> OH	986	788 709	485
n-C <sub>4</sub> H <sub>9</sub> OH		798	472
	971	800	456
i-C₄H₀OH	974	805	464
i-C <sub>3</sub> H <sub>2</sub> OH	976	800	464
s-C <sub>4</sub> H <sub>9</sub> OH	953	799	439
t-C <sub>4</sub> H <sub>9</sub> OH	958	810	460
Acyclic Ethers: $(K = -0.77, C = 1548 \text{ kJ/mol})$			
CH <sub>3</sub> OCH <sub>3</sub>	967	804	460
C <sub>2</sub> H <sub>3</sub> OCH <sub>3</sub>	938	822	448
C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>	918	838	444
$(n-C_3H_7)_2O$	895	846	427
$(n-C_4H_9)_2O$	910	852	448
(s-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O	879	874	439
t-C <sub>4</sub> H <sub>9</sub> OCH <sub>3</sub>	<908	846	<444
Cyclic Ethers: $(K = -0.40, C = 1192 \text{ kJ/mol})$			
c-C <sub>2</sub> H <sub>4</sub> O	1020	786	494
c-C <sub>3</sub> H <sub>6</sub> O	933	824	448
c-C <sub>4</sub> H <sub>8</sub> O	908	832	427
c-C <sub>5</sub> H <sub>10</sub> O	892	836	414
Aldehydes: $(K = -0.50, C = 1276 \text{ kJ/mol})$			
CH <sub>3</sub> CHO	987	781	456
C₁H₁CHO	960	793	444
n-C <sub>3</sub> H <sub>7</sub> CHO	949	801	439
1-C <sub>3</sub> H <sub>7</sub> CHO	936	806	431
1-C₄H₀CHO	936	806	431
- Carry Circ	930	800	431
<b>Ketones:</b> $(K = -0.39, C = 1188 \text{ kJ/mol})$			
CH <sub>3</sub> COCH <sub>3</sub>	936	823	448
C <sub>2</sub> H <sub>5</sub> COCH <sub>3</sub>	917	836	444
C <sub>2</sub> H <sub>3</sub> COC <sub>2</sub> H <sub>3</sub>	898	843	427
i-C <sub>3</sub> H <sub>7</sub> COCH <sub>3</sub>	897	851	435
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> CO	864	857	410
t-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	879	846	414
$(t-C_4H_9)_2CO$	836	864	389
Primary Amines: $(K = -0.59, C = 1406 \text{ kJ/mol})$			
CH <sub>3</sub> NH <sub>2</sub>	866	896	448
C₂H₃NH₂	855	908	452
n-C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub>	847	912	448
i-C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub>	841	915	444
n-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	841	914	444
s-C <sub>4</sub> H <sub>0</sub> NH <sub>2</sub>	839	923	448
1-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	839	915	444
t-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	833	924	444
n-C <sub>5</sub> H <sub>11</sub> NH <sub>2</sub>	836	916	439
	000	- 10	

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TABLE 2 5 2 1 The relationship between proton affinity, ionization energy, and hydrogen affinity for homologous series—Continued

 $PA(M) = C + C \cdot IP(M)$   $HA(M^{+}) = c + d \cdot IP(M)$ (C - c = 1312 kJ/mol, d - K = 1.00)

		kJ/mol	
	IP	PA	HA
condary Amines: $(K = -0.72, C = 1502 \text{ kJ/mol}, HA = 397 \text{ kJ/mol})$			
(CH₁)₂NH	794	923	406
(CH <sub>3</sub> )(C <sub>2</sub> H <sub>3</sub> )NH	786	932	406
(C <sub>2</sub> H <sub>3</sub> ) <sub>2</sub> NH	773	945	406
(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NH	756	952	397
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NH	746	963	397
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	742		
· · · · · · · · · · · · · · · · · · ·		956	385
(s-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	736	966	389
i-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	754	956	397
Fertiary Amines: $(K = -0.83, C = 1573 \text{ kJ/mol}, HA = 385 \text{ kJ/mol})$			
(CH <sub>1</sub> ) <sub>3</sub> N	754	942	385
$(CH_1)_2(C_2H_3)N$	747	952	385
$(CH_3)(C_2H_3)_2N$	723	962	372
(C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> N	723	972	385
			381
$(n-C_3H_7)_3N$	715	979	301
Aromatic Amines: $(K = -1.0, C = 1636 \text{ kJ/mol}, HA = 305 \text{ kJ/mol})$			
C₀H₃NH₂	741	877	305
C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> ) <sub>2</sub>	687	935	310
3-(CH <sub>3</sub> )C <sub>6</sub> H <sub>4</sub> N(CH <sub>3</sub> ) <sub>2</sub>	677	939	305
4-(CH <sub>3</sub> )C <sub>6</sub> H <sub>4</sub> N(CH <sub>3</sub> ) <sub>2</sub>	669	944	301
3,5-(CH <sub>3</sub> ) <sub>2</sub> C <sub>6</sub> H <sub>3</sub> N(CH <sub>3</sub> ) <sub>2</sub>	671	950	301
$C_6H_5N(C_2H_5)_2$	674	952	314
Mercaptans: $(K = -0.98, C = 1678 \text{ kJ/mol}, HA = 381 \text{ kJ/mol})$			
CH <sub>3</sub> SH	911	784	381
C <sub>2</sub> H <sub>3</sub> SH	896	798	381
n-C <sub>3</sub> H <sub>3</sub> SH	887	802	377
-C <sub>3</sub> H <sub>3</sub> SH	882	812	381
			381
a-C <sub>4</sub> H <sub>9</sub> SH	871	824	361
Thioethers: $(K = -0.83, C = 1531 \text{ kJ/mol}, HA = 360 \text{ kJ/mol})$			
CH <sub>3</sub> SCH <sub>3</sub>	838	839	364
C <sub>1</sub> H <sub>1</sub> SCH <sub>3</sub>	824	851	364
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> S	813	858	360
$(n-C_3H_7)_2S$	801	864	351
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> S	796	877	360
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> S	793	873	356
t-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> S	779	890	356
Nitriles:			
CH <sub>3</sub> CN	1177	788	653
C <sub>2</sub> H <sub>3</sub> CN	1142	806	636
n-C <sub>3</sub> H <sub>7</sub> CN	1129	810	628
-C <sub>3</sub> H <sub>7</sub> CN	1133	813	632
Esters: $(K = -0.58, C = 1401 \text{ kJ/mol})$			
HCOOCH <sub>3</sub>	1043	790	523
HCOOC <sub>2</sub> H;	1024	808	519
		813	515
HCOO(n-C <sub>3</sub> H <sub>3</sub> )	1015		
HCOO(i-C <sub>3</sub> H <sub>7</sub> )	1008	820	515
HCOO(n-C <sub>4</sub> H <sub>9</sub> )	1013	815	515
CH <sub>3</sub> COOCH <sub>3</sub>	991	828	506
CH <sub>1</sub> COOC <sub>2</sub> H <sub>5</sub>	966	840	494
CH <sub>3</sub> COO(n-C <sub>3</sub> H <sub>7</sub> )		839	494

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TABLE 2.5.2.1. The relationship between proton affinity, ionization energy, and hydrogen affinity for homologous series—Continued

$$PA(M) = C + K \cdot IP(M)$$
  
 $HA(M^+) = c + d \cdot IP(M)$   
 $(C - c = 1312 \text{ kJ/mol}, d - K = 1.00)$ 

		kJ/mol			
	IP	PA	HA		
Esters: $(K = -0.58, C = 1401 \text{ kJ/mol})$					
C₂H₃COOCH₃	979	838	506		
n-C <sub>3</sub> H <sub>7</sub> COOCH <sub>3</sub>	971	837	498		
1-C <sub>3</sub> H <sub>7</sub> COOCH <sub>3</sub>	951	843	481		
t-C <sub>4</sub> H <sub>9</sub> COOCH <sub>3</sub>	955	849	490		
Acids:					
CH <sub>3</sub> COOH	1028	796	510		
C₂H₃COOH	1015	802	506		

#### 3. Negative lons

The previous publication of evaluated heats of formation of ions, "Energetics of Gaseous Ions"<sup>2</sup>, contains ionization/appearance potential data for over 4000 species leading to evaluated heats of formation for more than 600 positive ions. By contrast, that volume contains thermochemical data for only 117 anions, including only 12 organic (C, H containing) anions. These statistics reflect the relative importance of studies on cation versus anion thermochemistry at the time of the cut-off for the literature search for that volume, 1971.

The large discrepancy in the numbers of early studies on anions as compared to cations is easy to rationalize. Most neutral species display a much lower cross section for production of anions than for cation production, with the necessary consequence that conventional electron impact mass spectrometry is much more adaptable to studies of positive ions. Similarly, the presence of excess energy in a cation can cause fragmentation, with the identities of the fragment cations providing useful structural information. In contrast, loss of an electron from a bound anion to form the corresponding neutral species is often energetically preferred to a dissociation process producing a fragment anion. Thus, the "cation bias" of much of gaseous ion thermochemistry until the last decade is understandable.

The renaissance in gas phase anion chemistry and thermochemistry came about with the development of chemical ionization mass spectrometry as a commonly-used technique. Anions are often more useful than cations for analytical work in that they can originate with less internal energy. In a proton transfer reaction leading to an anion product, the new bond which is formed—with its share of the excess energy of reaction—is in the departing neutral species (reaction 11) while in the analogous reaction involving cations (reaction 6), the new bond is

in the ion. Likewise, thermal electron attachment to those species which form stable radical anions is considerably faster than particle transfer, so that the chemical ionization step can be much more sensitive.

#### 3.1. Aims

The compilation of anion thermochemistry in this work has slightly different aims than the companion cation compilation, in that the latter presents only the "best" available values for the ionization energy/heat of formation of a given structure. A complete archive of the literature having to do with cations has not been given, because the previous compilations 1,2,3,4 have summarized the literature exhaustively. Although there have been a number of compilations concerned with the thermochemistry of anions in the last few years 11,68-75 these have not presented data which are critically evaluated, i.e., the best values are not assigned, save for atomic ions<sup>70</sup>. The advances in the last decade in ion/molecule chemistry and in such techniques as photoelectron and photodetachment spectrometry have resulted in a tremendous increase in the number of chemical structures for which some anionic thermochemistry is known. This publication therefore includes a collection of the literature data which is as complete as possible, and an assignment of the "best" value for the thermochemistry where sufficient information is available.

The thermochemical parameters of critical interest in this compilation are the heat of formation of the anion and the electron affinity of the radical or neutral molecule corresponding to the anion. In order to properly evaluate these, however, data on the energetics of chemical processes involving the anions (Brønsted basicity of the anion, parameters for solvation by neutral species, etc.) are also included. The extensive thermochemical ladders of relative acidities, electron affinities,

solvation thermochemistry, and similar data derived from chemical equilibria have provided a powerful tool for evaluating the thermochemistry of anions: chemical intuition. The use of structure-reactivity relationships allows the examination of the structure of an acid and a prediction about what its acidity, and therefore anion heat of formation, should be. The extra thermodynamic techniques such as linear free energy and enthalpy relationships often allow prediction of expected values accurate to better than a kJ/mol. Although results derived from such relationships can not always be trusted in cases of unusual structures, they nevertheless provide a reasonable rationale for assigning "best" values in many cases.

A problem that has become increasingly important recently is the question of the thermochemistry of the allied neutral species. As indicated below in the section on thermochemical relationships, the limiting factor in deriving anion thermochemical data is often the reliability of the data on the related thermochemistry of the neutral species (heats of formation, bond strengths). The information generated by the field of ion chemistry has outpaced the availability of neutral thermochemical data in recent years. In many cases, the best values for certain bond strengths are derived from data on the thermochemical properties of ions, rather than the other way around.

#### 3.2. Experimental Techniques

Detailed descriptions of the various techniques used to obtain anion thermochemical data will not be presented here, since these are well documented in the literature by their practitioners. Brief descriptions of each technique follow, with comments about accuracy and limitations. The phrase in square brackets following the name is the acronym used in the database to refer to the method.

#### 3.2.1. Laser Photoelectron Spectroscopy [LPES]

A fixed frequency laser (commonly 2.54 eV photons) is used to irradiate a beam of anions, and the energies of the detached electrons are analyzed 70. The method often provides information on the vibrational states of the neutral and ionic species as well. However, the assignment of the (0-0) threshold can be complicated by these states. The precision is commonly better than 0.2 kJ/mol, and can be much better.

#### 3.2.2. Laser Photodetachment [LPD]

In this technique, which may be considered the converse of photoelectron spectroscopy, the laser wavelength is varied to determine the threshold for detachment of a (presumably) thermal electron<sup>71</sup> from an anion. This experiment has usually been carried out in an ICR ion trap, with the decrease in the ICR signal of the ion as the detected quantity; the lower power of variable

wavelength lasers often requires a longer irradiation period than with the ion beam in photoelectron spectroscopy. Precision is ca. 1-4 kJ/mol. The detection of the true threshold is often complicated by a gradual onset, although the general theory of the onset has been worked out<sup>68,69</sup>. This method actually yields the vertical detachment energy, which is equated with the electron affinity. This assumption is usually valid, but fails for molecules for which the geometries of the anion and neutral are considerably different (i.e., for which there is poor Franck-Condon overlap). A notable case is CF<sub>3</sub><sup>-</sup>, where the photodetachment value is larger than the adiabatic value by 0.8 eV<sup>77</sup>.

A recent determination of the spectrum of the hydroxide anion is at a resolution of ca. 2 J/mol<sup>70</sup> while coaxial LPD for O<sup>-</sup> furnishes a resolution of 0.006 cm<sup>-1</sup>, or 0.07 J/mol<sup>76</sup>!

#### 3.2.3. Photodetachment [PD]

Early photodetachment experiments were carried out using an arc lamp and a monochromator to irradiate the ICR cell<sup>71</sup>. Precision was lower than with the laser experiment.

#### 3.2.4. Photodissociation [PDis]

Irradiation of anions does not always yield electron detachment as the first threshold process since bond cleavage may also be an allowed process. The wavelength threshold for such a process can provide information on the heat of formation of the anion, if the heats of formation of the products are known.

## 3.2.5. Ion/Molecule Equilibrium Constant Determinations [IMRE,Kine,TDEq,TDAs]

As discussed in Sec. 2.3.5., this evaluation takes into account (although previous works in the series did not) all information on ion thermochemistry generated by ion/molecule equilibrium constant determinations. In the case of anions, ion/molecule equilibrium studies on electron transfer reactions:

$$A^- + B \rightleftharpoons B^- + A \tag{49}$$

lead to scales of relative electron affinities.

$$K_{eq} = \frac{[B^-][A]}{[A^-][B]}$$
 (50)

while equilibrium constants for hydride or halide transfer reactions:

$$A + BY^- \rightleftharpoons B + AY^- \tag{51}$$

(where Y is H, F, Cl, Br, or I) lead to thermochemical ladders of relative acidities or halide affinities. Other scales of anionic thermochemistry are derived from equilibrium constants for solvation equilibria:

$$Y^- + X \rightleftharpoons [X \cdot Y^-] \tag{52}$$

Further, if the forward and reverse rate constants for a reaction are known, then the equilibrium constant, and thus  $\Delta G$ , can be calculated from kinetic data [Kine].

The bulk of the available data on anion thermochemistry in the past decade has been derived from ion/molecule equilibrium constant determinations and photoelectron/photodetachment spectroscopy. Extensive scales, spanning an energy range of nearly 400 kJ/mol, have been determined for proton transfer (leading to relative Brønsted acidities of molecules), electron transfer, and halide transfer reactions.

In general, the free energy changes associated with such equilibria are measured to a precision of ca. 0.5 kJ/mol. The absolute uncertainty of anion heats of formation derived from such results is usually on the order of 5-10 kJ/mol, and depends on the accuracy of the method of "anchoring" the resulting scales of relative thermochemical values.

There remain at present several points of uncertainty regarding these data. There is an active debate<sup>78</sup> about the actual temperature of the ions in an ICR cell. Although some early results indicated that effective ion temperatures could be as much as several hundred degrees above ambient<sup>78</sup>, the accuracy of the kinetic rate constant "thermometer" used as the basis of that judgement was not established. Comparisons of equilibrium constant data obtained in ICR cells with data derived from other sources indicate that the effective ion temperatures in ICR cells are not more than 10 degrees higher than measured gas temperatures in the cells<sup>22,78</sup>.

The measured equilibrium constant data lead directly to values of free energies, which require some knowledge of the entropy changes of the processes under consideration in order to derive the desired enthalpy changes. Entropy changes have been obtained either through statistical mechanical calculations<sup>79,80</sup>, or by measuring equilibrium constants as a function of temperature [TDEq = temperature dependent equilibrium constant], leading through a van't Hoff treatment of the results to experimental values for the entropy and enthalpy changes. Finally, the dynamic range (i.e. ion trapping time) of all the mass spectrometric techniques now in use for ion/molecule equilibrium constant determinations is such that the maximum free energy change which can be determined for particle transfer reactions is no greater than ca. 30-40 kJ/mol at most, and often only 10 kJ/mol at room temperature. The dynamic range for determinations of thermochemical parameters of association reactions is much greater [TDAs = temperature dependent association].

There have been questions raised regarding the accuracy of this method, since alcohol bond strengths derived in this way were consistently 9 kJ/mol smaller than accepted values. It was originally thought that this discrepancy was due to the temperature problem alluded to above<sup>78</sup>, because the acidity scale measured in the ICR spectrometer<sup>80</sup> was compressed relative to that determined by pulsed high pressure mass spectrometry<sup>79</sup>. If the equilibria established in the reaction cell of the ICR

spectrometer were actually at a higher temperature than the value which was used to convert  $K_{eq}$  to  $\Delta(\Delta_{acid}G)$ , then the calculated free energy scale from ICR experiments would be compressed. However, the gas phase basicity scales measured by ICR and by high pressure mass spectrometric methods agree quite well4. In addition, Taft<sup>81</sup> has recently redetermined many of the relative acidities that make up the thermochemical ladder, and finds that the region of the acidity scale from trifluoroethanol to acetone has a larger range than the original work indicated. These results have been confirmed in the laboratory of one of the present authors82. The region of the acidity scale from trifluoroethanol up to methanol has therefore been adjusted to include these new data. The data affected by this revision are still referred to by the original literature reference, e.g. 79BAR/SCO, and the original values are still displayed, but the method is denoted IMRE°. The revised values are preferred in the evaluation.

#### 3.2.6. Ion/Molecule Reaction Bracketing [IMRB]

For most of the techniques currently used for studying thermal ion/molecule reaction equilibria and kinetics, ions can only be examined for, at most, several thousand collisions with the reactive neutral gas. Thus, any reaction more endothermic than a few kcal/mol can not be observed on the time scale of the presently used techniques. In the observation of a series of reactions for which the functional groups present at the reactive site of the molecule are always the same, and the energy of the reaction is being varied by changing some distant substituent, then if the rate constant falls to less than the observable rate over some small energy range, it is a fair assumption that the reaction pathway has become endothermic at that point. From this, an estimate of the thermoneutral (equilibrium) point may be made. This technique must be applied with caution, because the mechanism of the observed reaction may not be the same for the entire series of molecules, so that apparent variations in reactivity may not actually reflect the thermochemistry of the assumed reaction.

#### 3.2.7. Electron Impact Appearance Potentials [EIAP]

Since a bound anion must be thermochemically more stable than the combined energies of the free electron plus the neutral species, simple attachment of electrons, even thermal ones, in general results in rapid autodetachment. In certain cases, however, the excited anion state can fragment to yield either an anion plus a neutral species (dissociative attachment), or an anion plus a cation (ion pair production). The latter process has not been well studied save for relatively small species, and is not at present a source of much thermochemical data. On the other hand, a considerable amount of thermochemical data has been derived from experiments in which the onset energy for dissociative attachment is measured. A

complication in the interpretation of such onsets involves the unknown internal energy of both the anionic and neutral fragments. A particularly useful case is where two onsets are observed, with the fragments differing only in the identity of the species associated with the electron:

$$AB + e \rightarrow A^{-} + B \cdot \tag{53}$$

$$\rightarrow A \cdot + B^{-} \tag{54}$$

If the electron affinity of one of the product species is known, that of the other can be inferred from the known electron affinity and the difference in the onset energies for the two channels.

Most workers have not used monoenergetic electron beams, so the precision in the energy onsets is generally larger than 0.1 eV (10 kJ/mol). The resulting anion heats of formation include that uncertainty plus the uncertainties in the heats of formation of the associated reactant and neutral species. A few retarding potential difference measurements have been carried out, to improve the accuracy of such results.

## 3.2.8. Neutral Beam Ionization/Appearance Potentials [NBIP/NBAP]

Collision of a neutral species with an energetic particle of low ionization potential, such as an alkali atom, can result in electron transfer, giving an alkali cation and an anion<sup>83</sup>. The electron affinity of the neutral species is equal to the translational energy of the alkali atom less its ionization potential. Determinations of electron affinities by this method have the advantage that one obtains values for the true electron affinity: electron attachment to a neutral species, rather than detachment from an anion. Certain anions can be produced by this technique which are not accessible via electron impact due to low energy exit channels, e.g. CCl<sub>4</sub>-. Due to the limited energy resolution of the neutral alkali beam, the precision of this technique is not high, typically 20 kJ/mol. The onset energies of fragment ions can also provide useful thermochemical information, if the thermochemistry of the co-produced neutral species is known.

Normally this technique results in a determination of the adiabatic electron affinity, but for a sufficiently fast beam of neutral species, the onset corresponds to the vertical attachment energy of the electron, which, in contrast to detachment methods, is smaller than the adiabatic value.

#### 3.2.9. Photolonization [Pi]

This technique involves production of cation-anion pairs by vacuum ultraviolet photons. It has been used primarily for small molecules  $(O_2, F_2, \text{ etc.})$ . The difference in onset for dissociative ion pair production and-dissociative ionization

$$AB + h\nu \rightarrow A^- + B^+ \tag{55}$$

$$AB + h\nu \rightarrow A\cdot + B^+ + e$$
 (56)

corresponds to the electron affinity of A.

## 3.2.10. Endothermic Reaction Energy, Including Charge Transfer [Endo,EnCT,CIDT]

If an ion/molecule reaction is appreciably endothermic at thermal (room temperature) energies, it is not observable by present techniques. For some processes it is possible to increase the rate by increasing the translational energy of the reactants so that products can be observed. Assuming that all the translational energy is available to bring about the reaction through the intermediacy of a long-lived complex in which energy is statistically distributed, the onset energy for observation of a given reaction can be taken as the threshold for the process, and thermochemistry assigned accordingly. Here the acronym "Endo" describes the use of such onset energies for deriving thermochemical data, "EnCT" the use of such onsets in charge transfer processes.

A variant is the case of collision of a non-reactive species, which serves only to provide the energy necessary for the negative ion to fragment or detach the electron. This is termed the "Collision Induced Dissociation Threshold" method [CIDT].

#### 3.2.11. Surface ionization (Magnetron) [SI]

The production of ions on a surface can yield thermochemical data if a number of parameters are known, including the work function of the surface. A common version of this experiment, the Magnetron technique<sup>84</sup> [Surface Ionization, SI], lacks mass analysis, and therefore many of the values for thermochemical parameters resulting from this method correspond to anions of uncertain identity. Precision is thought to be several tenths of a volt (>20 kJ/mol).

#### 3.2.12. Electron Swarm [ES]

In this technique<sup>85</sup>, the electron affinity of a neutral species (usually a closed shell molecule) is calculated by a statistical method, using the rate of electron attachment, the autodetachment lifetime, and the vibrational frequencies of the species. The attachment rate is measured in a drift tube — electron swarm experiment, and extrapolated to thermal energy. The autodetachment lifetime is taken from results of beam experiments. The precision is probably a few tenths of an eV (30-40 kJ/mol) at best.

#### 3.2.13. Lattice energy [Latt]

The heat of formation of an anion can be derived from a Born-Haber cycle using the lattice energy and heat of formation of a crystal and the thermochemistry of the appropriate gas phase cation. This method is not especially accurate relative to more recent techniques, but for some singly charged inorganic anions it provides the only data available.

#### 3.2.14. Kinetic Branching Methods [Bran, CIDC]

If certain ion/molecule complexes are subjected to collision induced dissociation (CID), the weakest bond between the two species in the complex is the most likely one to break. If the functional groups forming the bond are identical, with the acids differing only in distant substitution, then either species has a chance to acquire the proton on breakup of the complex. The branching ratio in the reaction:

$$ROH \cdot -OR' \xrightarrow{M} ROH + R'O^{-}$$
 (57a)

$$\stackrel{M}{\rightarrow}$$
 RO<sup>-</sup> + R'OH (57b)

has been shown to reflect the relative acidities of the two species<sup>87</sup>. Once the sensitivity of this branching ratio for compounds of known acidity has been established, then CID of clusters with one compound of known acidity and one unknown can lead to an estimate for the acidity of the unknown species. This appears to be reliable to 1-2 kJ/mol in determining relative acidities. This approach has some limitations. First, values for the gas phase acidities for several members of the series must first be known from other sources for proper calibration. Further, the temperature of the reacting system is not defined, and so problems may arise in interpretation for systems with significant entropy changes. The general method has also been applied to the estimation of relative electron affinities87 for complexes of aromatic radical anions with aromatic molecules.

The excited intermediate complex can be prepared other ways than by collision. If an ion/molecule reaction is sufficiently exothermic, and has more than one available reaction channel, then the branching ratio of products formed on breakup of the complex can reflect product stabilities. This assumption has been used to estimate the acidities of the simple alkanes<sup>88</sup> since many of the localized carbanions from those compounds do not appear to be bound with respect to electron loss. Such ions exist only in ion/molecule complexes, where the cluster energy may serve to prevent electron detachment before reaction.

#### 3.2.15. Electron Transmission Spectroscopy [ETS]

In this technique, the scattering angles of a monoenergetic electron beam impacting on a gas at less than the ionization threshold are determined. The presence of resonances in the spectrum implies electron capture to produce a temporary state, followed by autodetachment. This is the principal technique for measurement of negative electron affinities. Occasionally, a series of resonances can be extrapolated to below zero electron energy to give an estimate of a positive electron affinity<sup>11</sup>.

#### 3.2.16. Electron Capture Detector [ECD]

An electron capture detector for a gas chromatograph, when operated in a variable temperature pulse sampling mode, can provide data on electron capture/detachment ratios. These can be converted into electron affinities. Use of the method is limited to the determination of electron affinities in the 0.2-0.8 eV (20-80 kJ/mol) range. The precision of such measurements is commonly quoted as less than 1 kJ/mol<sup>89</sup>.

#### 3.2.17. Mobility of lons in a Gas [Mobi]

If the mobility of an ion in a gas can be measured in response to a weak electric field, the potential well depth, corresponding to  $\Delta_{\text{aff}}H$ , for the ion associating with the neutral gas can be determined.

## 3.2.18. Laser Optogalvanic Photodetachment Spectroscopy [LOG]

The gas of interest is subjected to an electrical discharge, and the discharge region is probed by a laser. The LOG<sup>90</sup> spectrum is recorded by scanning the wavelength of the laser, and monitoring laser-induced changes in the discharge impedance. The spectrum produced will be similar to the laser absorption spectrum but relative intensities of spectral features may be very different. The method is particularly suitable for detecting unstable (radical) species.

#### 3.3. Thermochemical Cycles

The relationships between the different quantities measured in the above experimental techniques can be exploited to derive additional thermochemical information. In Table 2, such derivations have been made wherever possible. In the table, the quantities which have been derived from the experimentally-determined value are indicated by superscripted letters, which correspond to the various types of derivation described here, while the quantity actually determined in the reported experiment is given without any superscripted letter. A list of the various approaches to derivation and their corresponding superscript letters is given in the Table in Sec. 5.2.

The heat of formation of an anion can be derived from the heat of formation of the acid, its gas phase acidity, the heat of formation of the proton:

$$\Delta_{f}H(A^{-}) = \Delta_{scid}H(AH) - \Delta_{f}H(H^{+}) + \Delta_{f}H^{\circ}(AH)$$
 (58)

The quantity  $\Delta_t H^{\circ}(AH)$  is lacking in many cases where acidities are now available; various group additivity estimation schemes (see below, and Sec. 4.) have been employed to fill in this information.

As discussed in Sec. 1.6.3., the calculation of the anion heat of formation as the heat of formation of the neutral species less the electron affinity:

$$\Delta_{f}H(A^{-}) = \Delta_{f}H^{\circ}(A) - EA(A)$$
 (59)

is not, strictly speaking, correct, since for most of the species given here the heat of formation of the neutral species is a 298 K value, while the electron affinity is a threshold 0 K value. The preference is for anion heats of formation calculated by Eq. 58.

In an inversion of the bond strength/electron affinity Eq. 32 for calculating acidities, a known acidity and bond strength can yield an *electron affinity*.

$$EA(A) = BDE(A-H) + IP(H-) - \Delta_{acid}H(AH)$$
 (60)

Based on the temperature cancellation effect, this should correspond to the 0 K value. This is also an adiabatic value, which can be less than the vertical electron affinity obtained from the optical techniques if the geometries of the neutral and anion differ appreciably.

The difference between the anion and neutral heats of formation (at 298 K) give a 298 K electron affinity:

$$EA(A) = \Delta_f H^{\circ}(A) - \Delta_f H(A^{-})$$
 (61)

If the geometry change is small, this should be a reasonable approximation to the 0 K value.

Gas phase acidities, taken as the enthalpy of acidity, can be calculated from the homolytic bond strength of the acidity site, the electron affinity of the resulting radical, and the ionization energy of the hydrogen atom:

$$\Delta_{\text{acud}}H(AH) = BDE(A-H) - EA(A) + IP(H)$$
 (62)

The last is common to all acids, and is very accurately known (1311.98 kJ/mol), and does not present a limitation in determining the values. A more valid concern is the temperature of definition for these terms. The acidity and bond strength are commonly taken as 298 K values, while the electron affinity and ionization potential are threshold values defined at 0 K. The cancellation necessary for this equation to be considered valid is discussed in Sec. 1.6.3.

Sometimes a heat of formation of an anion or an electron affinity value may be known without a value for the bond strength being available. The acidity of the conjugate acid can be derived in those cases from the acid heat of formation:

$$\Delta_{\text{acid}}H(AH) = \Delta_{\text{f}}H(A^{-}) + \Delta_{\text{f}}H(H^{+}) - \Delta_{\text{f}}H^{\circ}(AH)(63)$$

While the primary goal of this work is not to obtain values for homolytic bond strengths, such values can be derived from gas phase acidities and electron affinities in cases where they are not known from more conventional sources.

$$BDE(A-H) = \Delta_{acid}H(AH) + EA(A) - IP(H-)$$
 (64)

$$BDE(A-H) = \Delta_t H^{\circ}(AH) - \Delta_t H^{\circ}(A) - \Delta_t H^{\circ}(H)$$
(65)

#### 3.4. Priority of Data

At the present time, the heat of formation of an anion in the gas phase is not directly measurable, since gas phase plasma calorimetry is not a known technique. Likewise, direct measurement of an electron affinity, in the sense of exothermic electron attachment to a neutral, is not feasible in a calorimetric sense, although the combination of attachment and detachment rate constants can be used. The electron affinity and anionic heat of formation are available from either thermochemical cycles, based on other known and measurable quantities, or by reasonable assumptions about the reversibility of processes such as electron detachment from anions.

For electron affinities, we adopt the following order of priority for the evaluation of "best" values. There are exceptions in many cases to this order, where a given method is known not to be suitable. The user should be aware of the difference between adiabatic and vertical values that these techniques yield.

Laser photoelectron spectroscopy

Laser photodetachment

Photodetachment

From bond strengths and gas phase acidities

Neutral beam ionization/appearance potentials

Electron impact appearance potentials

Ion/molecule bracketing reactions

Electron swarm

For gas phase acidities, the following priorities are assigned to data sources:

Direct gas phase equilibrium constant determinations

Kinetic methods for gas phase acidities:branching ra-

tios in collisional dissociation and ion/molecule complex breakup.

From bond strengths and electron affinities

Ion/molecule bracketing reactions (using either the heat of formation of the anion or of the acid as the unknown quantity).

#### 4. Thermochemistry of Neutral Species

Tables 1 and 2 display values for heats of formation of the neutral gas phase molecules which are "related" to the archived ions. In Table 1, which is concerned with cation thermochemistry, the "related" neutral species is either (a) the neutral molecule which corresponds to the ion plus an electron (for ionization potential data) or (b) the molecule which has one less proton than the ion of interest (for proton affinity data). In Table 2, concerned with anion thermochemistry, the term "related" means that the neutral is formed from the ion either by loss of an electron (electron affinity) or gaining of a proton (gas phase acidity). For every case, the identity of the neutral

molecule corresponding to the displayed heat of formation is made unambiguous.

#### 4.1. Literature Sources

Values for the heats of formation of neutral molecules were taken from the experimental literature whenever possible. If a value for a particular compound was available from an evaluated data compilation, this value was generally selected for inclusion here. The primary compilations which were used were as follows.

#### 4.1.1. Organic Compounds

J. B. Pedley and J. Rylance, "Sussex-N. P. L. Computer Analysed Thermochemical Data: Organic and Organometallic Compounds," University of Sussex (1977). The numerous data from this evaluated compilation<sup>91</sup> of 298 K heats of formation of gas phase organic compounds are identified by the squib 77PED/RYL. A second edition of this work (86PED/NAY) has appeared<sup>92</sup>, but regrettably, was available to the authors of the current compilation too late to obviate an extensive literature search for heats of formation from the primary literature to cover the period 1976-mid-1986. Since the updated compilation of Pedley, Naylor and Kirby<sup>92</sup> (which is complete only through 1982) became available only as this work was nearing completion, references to 77PED/RYL or to recent primary literature have been retained even in cases where the data are given in 86PED/NAY.

#### 4.1.2. Inorganic Compounds

(1) D. D. Wagman, W. H. Evans, V. B. Parker, R. H. Schumm, I. Halow, S. M. Bailey, K. L. Churney, and R. L. Nuttall, "The NBS Tables of Chemical Thermodynamic Properties: Selected Values for Inorganic and C<sub>1</sub> and C<sub>2</sub> Organic Substances in SI Units," J. Phys. Chem. Ref. Data, Vol. 11, Suppl. 2 (1982), hereafter referred to as 82TN270, from the original publication of this compilation as a series of NBS Technical Notes called the 270-series. (It should be noted that when this source is used in Table 2, both the value and an associated error limit are given, while only the former is given in Table 1.)

(2) (a) D. R. Stull and H. Prophet, "JANAF Thermochemical Tables," NSRDS-NBS 37 (1971); (b) M. W. Chase, J. C. Curnutt, H. Prophet, R. A. McDonald, and A. N. Syverud, "JANAF Thermochemical Tables," 1975 Supplement, J. Phys. Chem. Ref. Data 2, 1 (1975); (c) M. W. Chase, Jr., J. L. Curnutt, J. R. Downey, Jr., R. A. McDonald, A. N. Syverud, and E. A. Valenzuela, J. Phys. Chem. Ref. Data, 11, 695 (1982). Information from these sources<sup>13</sup> is referenced as 71JANAF, 75JANAF, or 82JANAF. An updated composite edition<sup>13c</sup> of this com-

pilation was in press at the time this work was being prepared, but was not actually available until these tables were near completion. A few values for heats of formation from the updated version have been inserted here where warranted by changes in recommended values, but an exhaustive check of the new publication was not made.

(3) L. V. Gurvich, I. V. Veits, V. A. Medvedev, G. A. Khachkuruzov, V. S. Yungman, G. A. Bergman, et al, "Termodinamicheskie Svoistva Individual'nykh Veshchestv" (Thermodynamic Properties of Individual Substances); V. P. Glushko, Gen. Ed., Vols. 1 through 4 (in 8 parts), (1978–1982), Izdatel'stvo "Nauka" Moscow. These volumes<sup>15</sup> are collectively cited as 82TPIS.

#### 4.1.3. Specialized Classes of Compounds and Radicals

In addition, various literature compilations which cover well-defined, but restricted, classes of compounds such as nitriles, organometallic compounds, free radicals, or strained hydrocarbons were utilized. The preferential use of data compilations as sources of experimental data recognizes that these data have been evaluated for internal consistency insofar as possible.

Many values for heats of formation of free radicals were taken from the review of McMillen and Golden<sup>93</sup>. With respect to the alkyl radicals, however, a recent reevaluation of data from the literature has led to the suggestion that C-H bond energies in alkanes should be revised upwards<sup>94</sup>. The heats of formation of these radicals are still a matter of controversy at this writing. Values cited in the tables are based on the following revised<sup>94</sup> C-H bond strengths: Primary C-H bond (101 kcal/mol, 422 kJ/mol); Secondary C-H bond (99 kcal/mol, 415 kJ/mol); Tertiary C-H bond (95 kcal/mol, 398 kJ/mol).

The corresponding values for the heats of formation of the alkyl radicals are in some cases (e.g. t-butyl radical) entirely consistent with the differences between well-established heats of formation of the corresponding alkyl cations and experimental ionization energy values, but there are also cases for which the relevant values show inconsistencies. These are pointed out in Table 1 by a specific comment.

#### 4.1.4. Other Literature Sources

Experimental information about heats of formation of species not included in evaluated compilations was generally obtained from primary literature sources. When more than one value for a heat of formation was available from such unevaluated primary sources, and no supplementary information was available which would allow an educated choice, the most recent value was usually arbitrarily chosen in the possibly naive expectation that "improved instrumentation" as well as a greater (historical) awareness of the problems inherent in an analysis of the thermochemistry of the particular species would lead to a more reliable value.

Care was taken in utilizing these data from unrelated literature sources to be aware of ambiguities in thermochemical reference states. Values for heats of formation derived from heats of reaction (e.g. hydrolysis, bromination) were used in preference to directly-determined heats of combustion because of the inherent problems associated with numbers derived from relatively small differences between two large numbers. In many cases, heats of formation of neutral species were derived using well-established ionization energies or proton affinity values in combination with well-established heats of formation of relevant ions; these values are identified by an explanatory sentence in the comment field.

#### 4.2. Conventions Used and Assumptions Made

Implicitly, in assigning gas phase heats of formation to the neutral species, the compounds are assumed to be ideal gases at S. T. P. Whenever sufficient information is readily available, values for heats of formation at both 0 and 298 K are given. In some cases, the 0 K value has been obtained by combining the 298 K values from a preferred literature source (i.e., an evaluated compilation) with the 298—0 K difference taken from another reference. In other cases, this difference was calculated from experimental or estimated extrathermodynamic quantities such as vibrational frequencies and the appropriate elemental thermochemical functions. Another approach was to use isoelectronic or isostructural analogies (e.g., data for O<sub>3</sub> may be compared with that on NO<sub>2</sub>-and neutral NO<sub>2</sub>).

#### 4.3. Use of Condensed Phase Heats of Formation

Numerous methods exist for measuring and interpreting experimental heats of sublimation and heats of vaporization. Where available, such measurements were used to translate condensed phase data into gas phase values for heats of formation. In such cases, the cited reference is the source of the condensed phase heat of formation data, although the bibliography includes the references from which the information about heats of sublimation or vaporization were obtained.

In most cases, data on heats of sublimation (and the associated methodologies for translating condensed phase heats of formation to gas phase values at 298 K) are from the recent publication<sup>95</sup>, 87CHI, for organic compounds.

Regrettably, while work on this publication was in progress no such single literature source for heats of vaporization was available, although such a compilation has since appeared 6. In fact, however, experimental data on heats of vaporization do not exist for numerous species of interest here, either because of experimental difficulties associated with such determinations (i.e. lack of adequate volatility, purity, or thermal stability) or per-

haps because of a lack interest in, or availability of, the compound.

Estimation methods for heats of vaporization and sublimation have been described in the literature 95,97. Some require auxiliary experimental data (e.g. critical constants). Other such estimation methods can be applied only to well-defined classes of compounds. For heats of vaporization, these estimates are usually reliable to approximately 4 kJ/mol (1 kcal/mol). In presenting data on heats of formation incorporating the use of such estimated heats of vaporization, a choice had to be made of whether to cite the source of the experimental heat of formation of the liquid or the paper from which the method for estimating the heat of vaporization was obtained; the experimental work is given as the primary citation. For heats of sublimation, no generally accurate estimation approaches exist. Thermochemical values obtained using estimated heats of sublimation are clearly labelled as estimates in the tables.

#### 4.4. Estimated Heats of Formation

Estimates were also made for heats of formation of neutral molecules and radicals for which no experimental data were available. Several estimation approaches were utilized and are now briefly described. The relationships between the various estimation approaches have been described in a recent review<sup>98</sup>.

#### 4.4.1. Estimates from Data on Isomeric Species

One approach utilizes experimental information about isoenergetic processes for the formation of two or more isomeric species in a particular reaction. That is, given a pair of isomers for which information about the heat of formation is available for only one of the pair, an estimate of the thermochemistry of the second compound can be based on the casual and generally rather reliable assumption that if two isomers are formed in comparable yield in a particular process then their Gibbs energies and enthalpies of formation are generally comparable. Likewise, though less reliable, one may assert if one isomer is formed in higher yield, then this is the more stable product. Estimates made in this way often include the assumption that heats of vaporization and of solution are also comparable for the relevant pair of isomers; this will be a valid approximation except when there are great differences in the extent of hydrogen bonding (such as might exist for isomeric alcohols and ethers), and even in these cases, approximate corrections (such as assuming constant H-bond strengths) can be made.

In estimating thermochemical data from known information about an isomeric species, a common assumption made is that  $\Delta(\Delta_l H) = \Delta(\Delta_l G)$  for the pair of isomers (i.e.  $\Delta(\Delta_l S)$  is negligible). A related approach examines experimentally-determined reaction rates and/or kinetic activation energies. The thermochemical estimate is

based on the assumption that the structural effects on rates and equilibria will vary in a parallel manner, and that thermodynamic and kinetic control of arbitrary reactions result in the same products. While not in fact absolutely true, experience has shown this to be a useful assumption for predicting substituent effects for numerous homologous series.

Another approach to estimating heats of formation is based on the assumption that  $\Delta(\Delta_1 H)$  can be equated with  $\Delta E_{\rm tot}$  for two isomers, where  $\Delta E_{\rm tot}$  is the difference in total energies of the two species calculated by quantum mechanics. For this assumption, as well as all other estimation approaches in this study employing results from quantum mechanics, ab initio calculations were given preference over results from any of the plethora of semi-empirical methods in the literature. (The reader should note that heats of formation from MNDO and from molecular mechanical calculations were occasionally used, however). Care was explicitly taken to contrast only species studied with the same basis set and degree of geometry optimization. Implicit, however, are the requirements that both the zero-point energy and 0 K - 298 K corrections are essentially identical for a pair of isomers. These last assumptions are surprisingly valid where sufficient experimental data are available to test them.

All values for heats of formation based on these approaches are labelled as estimates (EST) in the Tables.

#### 4.4.2. Summing of Increments

There remain three related approaches which were employed to estimate heats of formation of molecules here. The best characterized is Benson's "group increment" approach in which the molecule of interest is defined as a collection of groups, and a "group" is then defined as a polyvalent atom (ligancy > 2) with all of its associated ligands in the molecule. The heat of formation of the molecule is obtained by summing the contributions of the heats of formation of the various groups, correcting for various higher order interactions and "correction" terms. These corrections include the presence of gauche configurations in substituted alkanes, gem-substitution of large and/or polar groups, and the presence of rings that are strained because of heteroatoms and/or are not six-membered. These group energies and the various corrections have been obtained using both statistical analysis and by chemical intuition, and for "reasonable" molecules generally give reasonable results. Estimates using this approach are better defined, though not necessarily of better quality, than the others.

Because this approach is now very common in the chemical literature, many of the papers included here which are primarily concerned with aspects of ion chemistry (e.g. ionization energy, gas phase basicity or acidity determinations) include estimates of heats of formation of relevant neutral species based on this approach; rather

than cite the work of the authors who made the (rather standard) estimate, these values, when they were used, have been labelled as estimates. In Table 2 estimates utilizing this approach are labelled "Est", but are accompanied by error bars.

A related approach takes advantage of regularities in trends in heats of formation of different homologous series of compounds. As an example of how this approach works, if it is observed that the heats of formation of several RXR compounds differ from those of RYR compounds by some approximately constant increment, then this difference is defined as a "correction term" for deriving heats of formation of any -Y- compound from the heat of formation of the corresponding -X- compound (or vice versa)<sup>100</sup>. The unknown heat of formation is taken to the be the sum of the known heat of formation and the suitable correction term associated with the exchange of the substituent and parent components. One may also derive correction terms from suitable bond energies, e.g., assume that the O-H bond energy in all carboxylic acids is the same. This approach is more commonly used in anion chemistry and is designated as Est2 in Table 2 (but as EST without a special designator in Table 1).

The final estimation approach used here is commonly called "macroincrementation" 101,102, and, as the name implies, involves building up the molecule of interest by adding increments (as in the Benson approach), but with the difference that the incremental heats of formation are specifically derived from thermochemical data for molecules or large ("macro") molecular fragments which incorporate factors which need to be considered, such as resonance, strain energy, steric effects, etc. This approach assumes that "if for each of two sets of molecules the total number of bonds, atoms and structural types is the same, then the total heat of formation of each set of molecules is the same. Then, if all but one of the heats of formation are available, the remaining one can be estimated by simple arithmetic." Macroincrementation maximizes the direct use of chemical intuition with regard to electronic and/or steric effects, as well as the direct use of available experimental data. The majority of estimates for organic compounds in Table 1 were made using this approach.

The heats of formation of only a few inorganic or organometallic compounds were estimated. Where estimates were made, it generally was assumed that the heat of ligand exchange was negligible, i.e. the heats of reaction of the following generic reactions for suitably similar ligands ( $L_1$  and  $L_2$ ) could be taken to be zero:

$$M-L_1 + L_2 \rightleftharpoons M-L_2 + L_1 \tag{66}$$

$$L_1-M-L_1 + L_2-M-L_2 \rightleftharpoons 2(L_1-M-L_2)$$
 (67)

Likewise, simple additive assumptions were made as to heats of vaporization and sublimation and the 0 K - 298 K energy differences.

# 5. Summary of Conventions Used in Tables

In an attempt to present as much information as possible in Tables 1 and 2, while keeping the pages uncluttered, it was sometimes necessary to resort to the use of bold face, italic typefaces, asterisks, etc. to convey additional information. The various conventions are summarized below. The user is particularly cautioned that these conventions are different for Table 1 and Table 2. In particular, italicized numbers have different meanings in Table 1 (zero Kelvin heats of formation) and Table 2 (a hydride or halide affinity, and information relating to thermochemistry of neutral species).

### 5.1. Positive Ion Table (Table 1)

Value underscored: A well-established value of an ionization energy or ion heat of formation.

Value enclosed in parentheses: A value of an ionization energy or heat of formation which is not well established, or not evaluated, for one of the following reasons: (1) Only one determination of the ionization energy has been reported, and there are no auxiliary data which would permit one to judge its accuracy; (2) The heat of formation of relevant neutral species is/are not well established; (3) Two or more contradictory values for the ionization energy or appearance energy have been reported, and while one value has been selected, there is sufficient doubt that one can not regard the selected value as well-established. (For data falling under category (3), an explanatory comment is always included.)

Value given in italics: Thermochemical data corresponding to a temperature of absolute zero.

Literature citations: In Table 1, there is no column giving references to the source of ionization energy/appearance energy data. Such data are always taken from the earlier compilations<sup>1,2,3,4</sup> unless specifically noted in a comment. When data are from the 1981–1986 primary literature, the reference is always specifically mentioned in the comment, and is specifically given in the bibliography. Heats of formation derived from proton affinity data (and the proton affinity data themselves) are taken from the evaluated compilation<sup>4</sup> or from more recent literature, which will always be specifically cited in the comment and listed in the bibliography.

Sort scheme: Data are sorted by empirical formula ordered according to the so-called Hill scheme, which is the same sort scheme used by Chemical Abstracts. Formulas are written as C<sub>n</sub>H<sub>m</sub>X<sub>x</sub>Y<sub>y</sub>..., where the primary sort is ordered by n, the number of carbon atoms, and the first sub-sort is ordered according to m, the number of H atoms. All other atoms in the molecule (X, Y, etc) are ordered alphabetically, and the various sub-subsorts follow accordingly. Any molecules which do not contain carbon appear according to a strictly alphabetical sort.

Proton affinity data: To locate the proton affinity of a molecule, look under the empirical formula of the protonated molecule, i.e. the proton affinity of CH<sub>4</sub> appears under CH<sub>5</sub>.

Estimated heats of formation of neutral molecules: The literature citation column contains the acronym EST for estimated values.

### 5.2 Negative Ion Table (Table 2)

Chemical species: Each entry is headed by an empirical formula of the relevant anion, with the atoms ordered according to the Hill formulation. Below this there appears a structural representation of the anion where this can be conveniently represented on one line; the last-listed atom is usually the atom judged to carry the negative charge (insofar as this can be ascertained). These formulas may contain simplifying abbreviations in common use by organic chemists, for example "Me" for CH<sub>3</sub>, "Et" for C<sub>2</sub>H<sub>5</sub>, "Pr" for C<sub>3</sub>H<sub>7</sub>, "COT" for cyclooctatetraene, or "Ph" for phenyl. For chemical species which have structures which are too complex to be represented by a semi-structural formulation, a name is given. The names chosen for inclusion are easily recognizable by most chemists, or at least can be readily located in standard texts.

Units: In Table 2, all data are presented in kJ/mol, except the values for electron affinities, which (as specifically indicated) are given in electron volts.

Presentation of Data: Each line presents data from a different reference, which is cited at the end of the line. The value (or values) which results (or result) from a primary experimental measurement will appear without an affiliated superscript alphabetic letter. These letters point out data which have been derived from the experimental result; the derivations are described in Sec. 3.3., and summarized (along with their alphabetic identifiers) in Table 5.2. The data in the Table are divided into columns as follows:

Ion  $\Delta_l H(A)$ ; EA(A)  $\Delta_{acid} H(AH)$ ;  $\Delta_{acid} G(AH)$ ; Method, Comment; Reference or eV or or  $[X \cdot \cdot Y^-]$   $\Delta_{aff} H(X \cdot \cdot Y^-)$   $\Delta_{aff} G(X \cdot Y^-)$ 

Ion: The chemical formula of the anion of interest.

 $\Delta_t H(A^-)$  or  $[X \cdot Y^-]$ : The second column presents the heat of formation of the listed anion in kJ/mol. The column heading specifies that the data correspond to anion  $A^-$  which may also be represented as  $[X \cdot Y^-]$ . The second designation is included for the cases where the heat of formation of the anion has been derived from data on the clustering of anion  $Y^-$  to neutral molecule X (see reaction 52). For example, data on the heat of formation of  $AlF_4^ (X \cdot Y^-)$  is derived from information on the fluoride affinity of  $AlF_3$  (that is,  $AlF_3$  is X and  $F^-$  is  $Y^-$ ).

EA(A): The electron affinity of neutral species A is listed in this column in electron volts.

BDE(A-H):

 $\Delta_{\text{acid}}H(AH)$  or  $\Delta_{\text{aff}}H(X\cdot\cdot Y^-)$  and  $\Delta_{\text{acid}}G(AH)$  or  $\Delta_{\text{aff}}G(X\cdot\cdot Y^-)$ : The fourth and fifth columns serve double purposes, with normal typefaced data representing the enthalpy change (fourth column) or Gibbs energy-change (fifth column), respectively, of reaction 10 for the species AH leading to a value for the heat of formation of anion A<sup>-</sup>. Data given in italics represent enthalpy changes for reaction 52, that is the affinity of molecule X for anion Y<sup>-</sup>. These have been derived either from direct determinations of equilibrium constants for reaction 52, or from equilibrium constants for Y<sup>-</sup> transfer reaction 51 which yield scales of relative Y<sup>-</sup>-affinities.

Method: This column gives an acronym to indicate the experimental technique used in determining a particular piece of data. These are discussed in detail in Sec. 3.2. For quick reference, an alphabetized summary of the acronyms with their definitions, and the locations of the relevant discussions, is given in Table 5.2. This table also includes other acronyms, abbreviations, and symbols used in Table 2 for ready reference.

Comment: Where necessary for clarity, details of a particular experiment are given as a comment. In this column, there also appears information about auxiliary thermochemistry concerning neutral species. All data pertaining to neutral species appear in a different italicized typeface.

Reference: The squib given in this column refers to the article in which the primary datum reported on a particular line was reported. The complete reference can be found in the bibliography for Tables 1 and 2.

Thermochemistry of neutral species: The relevant heats of formation of neutral species and accompanying references are given in the top line of the "Comment" column. All data and the references pertaining to neutral molecules are presented in a different italicized typeface, so that they will not be mistaken for data concerning the anion.

Sort scheme: Data are sorted by empirical formula using the same sort scheme as that used for the Positive Ion Table. This is the Hill (or Chemical Abstracts) scheme.

Acidity data: Data on the acidity of a given neutral species is given under the empirical formula of the conjugate base, i.e. the acidity of CH<sub>3</sub>OH is found under CH<sub>3</sub>O<sup>-</sup>.

Asterisk in left hand margin: Due to the comprehensive nature of the Negative Ion compilation, there can be numerous entries in Table 2 for a given quantity associated with a particular negative ion, unlike the convention adopted for the cation table, where only one value of an ionization energy/heat of formation is given. A special indication must be given, therefore, to denote the preferred value. Any line with an asterisk in the left margin contains the selected "best" value for a given piece of data pertaining to that ion. There may be more than one line thus marked for a given anion, since the best values for an acidity value and an electron affinity value may be from different sources.

(The quantity without a superscripted letter is the primary piece of information for any given line.)

Absence of asterisk in margin: If no line is marked as preferred in the data collected for an ion, then no definitive evaluation could be made. Some preference should be given to the first reference cited in such cases, but this is a qualitative judgement on the part of the compiler, and should not be given undue weight.

Superscript "o" after method acronym [IMRE]: Original data which were re-evaluated to take into account new results which expanded a portion of the acidity<sup>81,82</sup> scale; corrected values are shown above "original" data, with original reference cited for both values

Primary data originating from cited experimental reference: In Table 2, on any given line (which presents information derived from a single paper) items which were derived from the primary experimental data using the relationships listed in Sec. 3.3. and summarized in Table 5.2., have a superscripted letter indicating the relationship used to derive the value (see Table 5.2.). The primary data do not display a superscript.

TABLE 5.2. Acronyms, abbreviations and symbols used in Negative Ion Table

Bond dissociation energy of A-H bond

BDE(A-II):	bond dissociation energy of A-A bond
Bran:	Branching ratio in an exothermic reaction (see Sec.
	Sec. 3.2.14.)
Calc:	Calculation
CIDC:	Collision-induced dissociation of cluster ion-branching
	ratio (see Sec. 3.2.7.)
CIDT:	Collision induced dissociation threshold (see Sec.
	3.2.10.)
Def:	Defined
EA(A):	Electron affinity of A.
ECD:	Electron capture detector (see Sec. 3.2.16.)
EIAP:	Electron impact appearance potentials (see Sec. 3.2.7.)
EnCT:	Endothermic charge transfer threshold (see Sec.
	3.2.10.)
Endo:	Endothermic reaction threshold energy (see Sec.
	3.2.10.)
ES:	Electron swarm (see Sec. 3.2.12.)
Est:	Estimate, based on addition of increments
Est2:	Estimate, based on thermochemistry of analogous com-
	pounds
ETS:	Electron transmission spectroscopy (see Sec. 3.2.15.)
IMRB:	Ion/molecule reaction—bracketing (see Sec. 3.2.6.)
IMRE:	Ion/molecule reaction equilibrium constant determina-
<del>_</del>	tion (see Sec. 3.2.5.)
Kine:	Attachment/detachment rate ratio (see Sec. 3.2.5.)
Latt:	Lattice energy calculation (see Sec. 3.2.13.)
LOG:	Laser optogalvanic spectroscopy
LPD:	Laser photodetachment (see Sec. 3.2.2.)
LPES:	Laser photoelectron spectroscopy (see Sec. 3.2.1.)
Mobl:	Mobility of ion in gas (see Sec. 3.2.17.)
NBAP:	Neutral beam appearance potential (see Sec. 3.2.8.)
NBIP:	Neutral beam ionization potential (see Sec. 3.2.8.)
PD:	Photodetachment (see Sec. 3 2.3.)
PDis:	Photodissociation (see Sec. 3.2.4.)
	( ( ( ( ( ( (

TABLE 5.2. Acronyms, abbreviations and symbols used in Negative Ion Table — Continued

PI:	Photoionization (see Sec. 3.2.9.)
PLA:	Plasma absorption
SI:	Surface ionization (Magnetron) (see Sec. 3.2.11.)
TDAs:	Temperature dependent association equilibrium constant determination (see Sec. 3.2.5.)
TDEq:	Temperature dependent equilibrium constant determination (see Sec. 3.2.5.)
$\Delta_t H(A^-)$ :	Heat of formation of A
$\Delta_{\rm aff}H({\rm X}\cdot\cdot{\rm Y}^-)$ :	Enthalpy of association of neutral $X$ to anion $Y^-$ , the affinity of $X$ for $Y^-$
$\Delta_{\rm eff}G(X\cdot\cdot Y^-)$ :	Gibbs energy of association of neutral X to anion Y
$\Delta_{\text{ecid}}H(AH)$ :	Acidity of molecule AH; see definition below under f

## Single letter codes which define chemical reaction types (superscripts)

```
a: \Delta_{l}H(A^{-}) = \Delta_{scid}H(AH) - \Delta_{l}H^{*}(AH) + \Delta_{l}H(H^{+})

b: \Delta_{l}H(A^{-}) = \Delta_{l}H^{*}(A) - EA(A)

c: \Delta_{l}H(X \cdot Y^{-}) = -\Delta_{sfl}H(X \cdot Y^{-}) + \Delta_{l}H^{*}(X) + \Delta_{l}H(Y^{-})

d: EA(A) = \Delta_{scid}H(AH) - IP(H^{+}) - BDE(A - H)

e: BDE(A - H) = \Delta_{scid}H(AH) - IP(H^{+}) + EA(A)

f: \Delta_{scid}H(AH) = \Delta_{l}H(A^{-}) + \Delta_{l}H(H^{+}) - \Delta_{l}H^{*}(AH)

g: \Delta_{Rxn}H = \Delta_{Rxn}G + T\Delta_{Rxn}S

h: \Delta_{Rxn}G = \Delta_{Rxn}H - T\Delta_{Rxn}S

i: EA(A) = \Delta_{l}H^{*}(A) - \Delta_{l}H(A^{-})

j: \Delta_{sfl}H(X \cdot Y^{-}) = \Delta_{l}H^{*}(X) + \Delta_{l}H(Y^{-}) - \Delta_{l}H(X \cdot Y^{-})
```

### 5.3. References to Tables 1 and 2

The bibliography given at the back of the volume includes (a) references to the sources data having a bearing on the thermochemistry of the positive ions given in Table 1 (including ionization potentials, appearance potentials, proton affinities, and other related information) except when those references appeared in the bibliographies of references 1 through 4; (b) references to the sources of all data on the thermochemistry of negative ions from Table 2; and (c) references to the sources of the data on the thermochemistry of neutral molecules.

The references are identified in the tables, and in the bibliography, by a squib, made up of the year of the publication, the first three letters of the surname of the first author, followed by a slash and the first three letters of the surname of the second author. Example: A publication by J. B. Pedley and J. Rylance which appeared in 1977 would be designated by 77PED/RYL.

The references given in the bibliography are sorted according to these squibs, that is, first according to year, and then alphabetically according to the first three letters of the names of the first two authors. Example: Within the papers which appeared during a given year, reference to a paper by "Beauchamp and Armentrout" (BEA/ARM) would precede a reference to a paper by "Beach and Jackson" (BEA/JAC), which in turn would appear above a reference to "Beauchamp and Schwarz" (BEA/SCH). Note that papers of a given first author do not necessarily follow one another in the listing.

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Table 1. Positive Ion Table

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	ion) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
Ac+							
Ac	5.17±0.12	216	905	97	406	82TN270	7440-34-8
Ag+							
Ag	7.576	242.7	1015.6	68.0	284.6	82TN270	7440-22-4
	See also: 80KRA	<i>242.6</i>	1015.1	67.9	284.1		
AgAl <sup>+</sup>							
AgAl	(7.8±0.5) 0 K values.	(287)	(1200)	107	448	79HUB/HER	12379-67-8
AgBr <sup>+</sup>							
AgBr	≤9.59 0 K values.	≤246	≤1028	25	103	79HUB/HER	7785-23-1
AgCl+							
AgCl	(≤10.08) 0 K values.	(≤255)	(≤1065)	22	93	79HUB/HER	7783-90-6
AgF +							
AgF	(11.0±0.3) 0 K values.	(256)	(1071)	2	10	79HUB/HER	7775-41-9
AgH <sup>+</sup>							
AgH	(9.2) $\Delta_f H(\text{Ion})$ from on IP is $\Delta_f H(\text{Ion}) - D$			<i>67</i> on (86ELK/AF	282 LM). 0 K value	79HUB/HER	
Ag2 +							
Ag <sub>2</sub>	(7.35)	(267)	(1119)	98.0	410.0	82TN270	12187-06-3
		(268)	(1120)	98	411		
AI +							
Al	5.986	216.3 216.8	904.9 <i>907.3</i>	78.2 <i>78.8</i>	327.3 <i>329.7</i>	85JANAF	7429-90-5
MAu <sup>+</sup>							
AuAl	(7.6±0.3) 0 K values.	(263)	(1101)	88	368	79HUB/HER	12250-38-3
AIBO <sub>2</sub> +			<del>,</del>				
AIBO <sub>2</sub>	(9.5±0.5)	(90)	(376)	-129±4	-541±17	71JANAF	
MBr <sup>+</sup>					<u></u>		
AlBr	(9.3)	(218.3) (220.0)	(913.2) (920.4)	3.8±3.0 <i>5.5±3.0</i>	15.9±12.6 23.1±12.5	85JANAF	22359-97-3

Table 1. Positive Ion Table - Continued

			1. PUSITIV					
ION Neutral	•	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
AlBr <sub>3</sub> +		(10.4)	(142)	(593)	-98.1	-410.4	85JANAF	7727-15-3
Albig		•	(147)	(616)	-92.5	-387.2	<i></i>	,,2, 15 5
		IP is onset of pho	otoelectron b	and.				
AlCI+								
AICI		9.4	204 <i>204</i>	855 <i>855</i>	-12.3 -12.3	-51.5 -51.7	85JANAF	13595-81-8
							,	
AlCIF+		(7.0.4.0)	((0)	(27)	117	400	OCTANIA T	
AICIF		(7.9±1.0)	(66) <i>(65)</i>	(276) <i>(271)</i>	-117 -117	-489 -488	85JANAF	
t							<del></del>	<del> </del>
AlCl <sub>3</sub> +		(12.01)	(137)	(574)	-140	-585	85JANAF	7446-70-0
J		• •	(138)	(576)	-139	-583		
AlF <sup>+</sup>								
AIF		9.73±0.01	160.9	673.1		-265.7±3.4	79HUB/HER	13595-82-9
		IP from 84DYK/	<i>160.9</i> KIR.	673.9	-03.5±0.8	-265.6±3.4		
4117 ±								
AlF <sub>2</sub> +		(8.1)	(8)	(33)	-179	-749	81WOO	13569-23-8
2 2		IP from 85JANA						
AlF <sub>3</sub> +								
AIF <sub>3</sub>		≤15.45	≤67	≤282	-289	-1209	85JANAF	7784-18-1
		IP from 84DYK/	<i>≤68</i> KIR.	≤285	-288	-1206		
			· · · · · · · · · · · · · · · · · · ·					
AlI <sup>+</sup>		(9.3±0.3)	(230.7)	(965.3)	16.3±1	68.0±4.2	85JANAF	29977-41-1
		` ,	(231.0)	(966.6)	16.6±1	69.3±4.2		
AlI <sub>3</sub> +			· • · · · · · · · · · · · · · · · · · ·					
AlI <sub>3</sub>		(9.1)	(160)	(670)	<b>-49</b>	-208	82TN270	7784-23-8
		IP is onset of pho	otoelectron b	and.				
AlO <sup>+</sup>								
AlO		9.46±0.06	234.1 <i>234.2</i>	979.6 <i>979.7</i>	16.0±2 <i>16.0±2</i>	66.9±8 <i>67.0±8</i>	85JANAF	14457-64-8
		IP from 82ARM/						
AlO <sub>2</sub> +								
AlO <sub>2</sub>		(10.0±1.0)	(200)	(835)	-31	-130	82KAS/CHE	11092-32-3
AlP+								
AIP ·	~	(8.4±0.4)	(295)	(1232)	101	422	79HUB/HER	20859-73-8
		0 K values.	•	•				

Table 1. Positive Ion Table - Continued

			e ton table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
AlSe + AlSe	(8.3±0.5) 0 K values.	(243)	(1016)	52	215	79HUB/HER	23330-87-2
Al <sub>2</sub> + Al <sub>2</sub>	(5.4±1.0)	(240.9) (240.8)	(1008.0) (1007.3)		487.0±3.5 486.3±3.5	85JANAF	32752-94-6
Al <sub>2</sub> Br <sub>6</sub> <sup>+</sup> Br. Al Br Al Br	(10.97)	(21)	(87)	-232	-971	82TN270	18898-34-5
Br			وروا المراوية المراوية والمواركة والمواركة والمواركة والمواركة والمواركة والمواركة والمواركة والمواركة والمواركة				
Al <sub>2</sub> Cl <sub>6</sub> <sup>+</sup> .  Cl Cl Cl Cl Cl Cl	(12.18)	(-28)	(-116)	-309	-1291	82TN270	13845-12-0
Al <sub>2</sub> O + Al <sub>2</sub> O	(7.7±0.2)	(144) <i>(145)</i>	(603) (605)	-33±5 -33	-140±22 -138	82KAS/CHE	12004-36-3
Al <sub>2</sub> O <sub>2</sub> +	(9.9±0.5)	(131)	(551)	-97±12	-404±48	82KAS/CHE	12252-63-0
Am <sup>+</sup> Am	5.99 See also: 81CHE/0	206 GAB.	862	68	284	85KLE/WAR	7440-35-9
Ar <sup>+</sup>	15.75973±0.00001 See also: 81KIM/k	363.42 363.42 XAT.	1520.57 1520.57	0	0	*DEF	7440-37-1
ArH + ArH	From proton affin	277 ity of Ar (R	1159 N 7440-37-1). I	PA = 88.6 kca	/mol, 371. kJ/r	nol.	
ArHe + ArHe	15.735 $\Delta_{ m f} H$ (Ion) from 81	<i>362.8</i> DAB/HER	1518.0 . 0 K values.	-0.055	-0.23	79HUB/HER	12254-69-2

Table 1. Positive Ion Table - Continued

		1. Positiv		- Contini							
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne- kcal/mol		Neutral reference	CAS registry number				
ArHg <sup>+</sup> ArHg	(10.217±0.012) IP from 85LIN/BI	<i>(250.6)</i> RO.	(1048.6)	15.0	62.8	84BOU/BRA	87193-95-1				
ArKr <sup>+</sup>											
ArKr	13.484±0.015 IP from 82DEH/F	<i>310.6</i> PRA. 0 K val	<i>1299.7</i> lues.	-0.3	-1.3	79HUB/HER	51184-77-1				
ArNe <sup>+</sup>											
ArNe	15.685±0.004 IP from 82PRA/D	<i>361.6</i> EH2. 0 K v	<i>1512.9</i> alues.	-0.10	-0.43	76BOB/BAR	12301-65-4				
ArXe +											
ArXe	11.968±0.012 IP from 82DEH/F	<i>275.7</i> PRA. See als	<i>1153.4</i> so: 85PRA/DE	<i>-0.32</i> EH, 85PRA/DE	-1.35 IH2. 0 K values	76BOB/BAR	58206-67-0				
Ar <sub>2</sub> +	14.501.0.005	224.2	1200 1	0.24	_1.01	70UI ID/UHD	12505-50-4				
Ar <sub>2</sub>		14.501±0.025 334.2 1398.1 -0.24 -1.01 79HUB/HER 12595-59-4 IP from 82DEH/PRA2. See also: 81DEH/POL, 82LEV/LIA. 0 K values.									
As <sup>+</sup>			<del></del>								
As	9.7883±0.0002	298.0 <i>297</i> .7	1246.9 1245.8	72.3 72.0	302.5 <i>301.4</i>	82TN270	7440-38-2				
AsBr <sub>3</sub> +											
AsBr <sub>3</sub>	(10.0)	(200) <i>(205)</i>	(835) <i>(858)</i>	-31 <i>-25.5</i>	-130 -106.9	82TN270	7784-33-0				
	IP is onset of pho	toelectron b	and.								
AsClO <sup>+</sup>											
AsOCI	(11.1) IP from 83BIN.	(249)	(1040)	-7	-31	83BIN	14525-25-8				
AsCl <sub>3</sub> +											
AsCl <sub>3</sub>	(10.55±0.025)	(181) <i>(181)</i>	(756) <i>(758)</i>	-63 -62	-262 -260	82TN270	7784-34-1				
	See also: 83OZG.		(,,,,,								
AsF <sub>3</sub> +											
AsF <sub>3</sub>	(12.84±0.05)	(108) <i>(109)</i>	(453) <i>(457)</i>	-188 -187	-786 -782	82TN270	7784-35-2				
AsF <sub>3</sub> H <sup>+</sup>											
F <sub>3</sub> AsH	From proton affir	23 nity of AsF <sub>3</sub>	96 (RN 7784-35-	2). PA = 155 k	cal/mol, 648 k.	J/mol.					
AsH <sub>3</sub> +											
AsH <sub>3</sub>	9.89	244	1020	16	66	82TN270	7784-42-1				
~	See also: 82ELB/	<i>246</i> DIE	1028	18	74						

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			Δ <sub>f</sub> H(Ne	utrai)	Neutral	CAS registry
Neutral	eV		kJ/mol	kcal/mol		reference	number
AsH <sub>4</sub> +							
AsH <sub>4</sub>		202	846				
	From proton affin	nity of AsH	3 (RN 7784-42	-1). PA = 179.	2 kcal/mol, 750	kJ/mol.	
As <sub>2</sub> +							
As <sub>2</sub>	(10.1±0.2)	(278)	(1165)	45.5±0.7	190.4±2.9	73BEN/MAR	23878-46-8
		(278)	(1164)	45.5±0.7	190.4±2.9		
	See also: 85HIR/S	STR					
As <sub>4</sub> +				<del> </del>			
As							
As-/As	(9.07±0.07)	(244)	(1019)	34	144	82TN270	12187-08-5
As	See also: 85HIR/S	STR.					
As <sub>4</sub> O <sub>6</sub> +							
. U ,							
1,000 00 1,000 000	(9.6)	(-68)	(-283)	-289	-1209	82TN270	12505-67-8
0. As - 0°	IP is onset of pho	toelectron b	oand.				
Au <sup>+</sup>	**************************************						
Au	9.225	300	1256	87	366	82TN270	7440-57-5
		300.2	1256.0	<i>87.5</i>	365.9		
AuB+							
AuB	(8.7±0.5)	(337)	(1411)	137	572	79HUB/HER	12408-81-0
	0 K values.						
AuCe+						· · · · · · · · · · · · · · · · · · ·	
AuCe	(6.0±0.3)	(248)	(1036)	109	457	82TN270	12408-82-1
		(248)	(1039)	110	460		
AuHo+						<u> </u>	
AuHo	(6.2±0.5)	(242)	(1013)	99.1	414.5	82TN270	12044-80-3
	- •	(243)	(1016)	100	418		
AuLa+			<del></del>		<del></del>		
AuLa	(5.9±0.5)	(247)	(1033)	111	464	82TN270	12429-32-2
	· · · · · · · · ·	(247)	(1035)	111	466	•	<del>-</del> -
AuNd <sup>+</sup>			<del> </del>	······································			<del></del>
AuNd AuNd	(5.8±0.8)	(220)	(055)	04	305	82TN270	12/20 22 2
a 2004 140	(2.0±0.0)	(228) <i>(229)</i>	(955) <i>(957)</i>	94 <i>95</i>	395 <i>397</i>	0411/4/0	12429-33-3
4n.+		<del></del>	· ·	<del></del>			
AuPr <sup>+</sup> AuPr	(5.4±0.8)	(224)	(937)	99	416	82TN270	12429-34-4
	1344181	(//4)	(94/)	uu	4 ID	87 LIN 770	1/4/4-14-4

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Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_f H(Ic$	Ionization potential $\Delta_f H(Ion)$			Neutral	CAS registry					
Neutral	eV	kcal/mol	•	Δ <sub>f</sub> <i>H</i> (Ne kcal/mol		reference	number					
AuSi <sup>+</sup>					<u> </u>							
AuSi	(9.5±0.5) 0 K values.	(340)	(1422)	(121)	(505)	79HUB/HER	12256-53-0					
Au <sub>2</sub> +					<del></del>							
Au <sub>2</sub>	(9.5±0.3)	(343) <i>(341)</i>	(1433) <i>(1427)</i>	123.5 122.0	516.7 <i>510.4</i>	79HUB/HER	12187-09-6					
B+												
В	8.29808±0.00002	325.9 324.7	<u>1363.3</u> <u>1358.2</u>	134.5 133.3	562.7 557.6	82TN270	7440-42-8					
BBr <sub>2</sub> H +		<del>-</del>	<u> </u>									
внвг2	(10.92±0.02)	(227) <i>(</i> 231)	(949) (966)	−25±5 −21±5	-105±21 -88±21	71JANAF	13709-65-4					
	IP from 81FRO/K	(231) (966) -21±5 -88±21 IP from 81FRO/KIR.										
BBr <sub>3</sub> +			***************************************				_					
BBr <sub>3</sub>	(10.51±0.02)	(194)	(810)	-49±0.2	-204±1	71JANAF	10294-33-4					
BCI+			<del></del>									
BCI	(10.2)	(269.0)	(1125.5)	33.8 <i>33.1</i>	141.4 <i>138.4</i>	85JANAF	20583-55-5					
		(268.3) (1122.5) 33.1 138.4 $\Delta_f H(\text{Ion})$ from appearance potential (18.37±0.02 eV) in BCl <sub>3</sub> . Cited ionization potential is difference between heats of formation of ion and neutral.										
BCIF <sub>2</sub> +		······				<del></del>						
BCIF <sub>2</sub>	(13.06±0.11)	(88)	(370)	-213	-890	82TN270	14720-30-0					
BCl <sub>2</sub> +					<del></del>							
BCl <sub>2</sub>	(7.8)	(159)	(664)	-20±15	-83±63	71JANAF	13842-52-9					
	$\Delta_{ extsf{f}}H( ext{Ion})$ from ap Cited ionization $ extsf{p}$					and neutral.						
BCl <sub>2</sub> F +												
BCI <sub>2</sub> F	(12.18±0.10)	(130)	(544)	-151	-631	82TN270	14720-31-1					
BCI <sub>2</sub> F	(12.18±0.10)	(130)	(544)	-151	-631	82TN270	14720-31-1					
BCI <sub>2</sub> F	(12.18±0.10) (11.91±0.02)	(215)	(901)	-59.3±1	-248.1±4	82TN270 71JANAF	14720-31-1 10325-39-0					
BCl <sub>2</sub> F BCl <sub>2</sub> H +		(215) (216)										
BCI <sub>2</sub> F BCI <sub>2</sub> H + HBCI <sub>2</sub>	(11.91±0.02)	(215) (216)	(901)	-59.3±1	-248.1±4							
BCl <sub>2</sub> F BCl <sub>2</sub> H +	(11.91±0.02)	(215) (216)	(901)	-59.3±1	-248.1±4							
BCl <sub>2</sub> F  BCl <sub>2</sub> H +  HBCl <sub>2</sub>	(11.91±0.02) IP from 81FRO/K	(215) <i>(216)</i> IR.	(901) (904)	-59.3±1 -58.6±1	-248.1±4 -245.2±4	71JANAF	10325-39-0					
BCl <sub>2</sub> F  BCl <sub>2</sub> H +  HBCl <sub>2</sub> BCl <sub>3</sub> +  BCl <sub>3</sub> +	(11.91±0.02) IP from 81FRO/K	(215) (216) IR.	(901) (904) 715	-59.3±1 -58.6±1	-248.1±4 -245.2±4	71JANAF	10325-39-0					
BCl <sub>2</sub> F  BCl <sub>2</sub> H +  HBCl <sub>2</sub>	(11.91±0.02) IP from 81FRO/K	(215) (216) IR.	(901) (904) 715	-59.3±1 -58.6±1	-248.1±4 -245.2±4	71JANAF	10325-39-0					

Table 1. Positive Ion Table - Continued

	Table	I. I USIL	ive Ion Table	e - Contini			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	Ion) il kJ/mol	Δ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number
BFS <sup>+</sup> FBS	(10.90±0.01) IP from 84COO/K	(165) (RO.	(690)	-86	-362	*EST	83995-89-5
BF <sub>2</sub> + BF <sub>2</sub>	(9.4) From appearance	(75) potential	(314) of 15.81±0.04 e\	–141.0±3 V in BP <sub>3</sub> . IP is <i>l</i>		71JANAF H(Neutral).	
BF <sub>2</sub> H <sup>+</sup> HBF <sub>2</sub>	(13.60±0.05) IP from 81CHO/k	(138) <i>(139)</i> UR.	(578) (582)		-733.8±3.3 -730.1±3.3	71JANAF	13709-83-6
BF <sub>3</sub> + BF <sub>3</sub>	15.56±0.03 See also: 84FAR/S	87.1 <i>87.8</i> SRI, 84DE	364.3 <i>367.3</i> EH/PAR, 81ASI	-271.7 -271.0 3/SVE, 81KIM/	-1137.0 -1134.0 KAT.	82TN270	7637-07-2
ВН <sup>+</sup> ВН	9.77±0.05	331.1 <i>330.3</i>	1385.4 1382.2		442.7±8.4 439.5±8.4	85JANAF	13766-26-2
ВНО <sub>2</sub> <sup>+</sup> вно <sub>2</sub>	(12.6±0.2)	(156)	(654)	-134	-562	82TN270	13460-50-9
BHS <sup>+</sup> HBS	11.11±0.03	(268)	(1122)	12±10	50±42	78JANAF	14457-85-3
ВН <sub>2</sub> + ВН <sub>2</sub>	(9.8±0.2)	(274)	(1146)	48±15	201±63	71JANAF	14452-64-3
ВН <sub>3</sub> <sup>+</sup>	12.3±0.1	(308)	(1287)	24	100	82TN270	13283-31-3
BI <sub>3</sub> +	(9.25±0.03)	(230) (231)	(964) <i>(967)</i>	17.0 <i>18</i>	71.1 75	82TN270	13517-10-7
ВКО <sub>2</sub> + кво <sub>2</sub>	(8.62±0.14) See also: 85FAR/S	(38) SRI.	(160)	-161±2	-672±10	85FAR/SRI	
BLiO <sup>†</sup> Libo	7.7±0.5 IP from 85NEU.	(136)	(568)	-42	~175	*EST	77965-53-8
BLiO <sub>2</sub> + LiBO <sub>2</sub>	(9.8±0.5) IP from 85NEU.	(66)	(274)	-160	-671	71JANAF	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{f}})$	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
BNaO <sub>2</sub> +							
NaBO <sub>2</sub>	(9.18±0.10)	(58)	(242)	-154	-644	82TN270	
		(59)	(244)	-153	-642		
BO+	· · · · · · · · · · · · · · · · · · ·						
во	13.0±0.3	(300)	(1254)	0	0	83PED/MAR	12505-77-0
		(299)	(1251)	-1	-3		
	See also: 79BAG/	NIK, 85NE	U.				
3O <sub>2</sub> +		-					
BO <sub>2</sub>	(13.5±0.3)	(240)	(1003)	-72	-300	82TN270	13840-88-5
	IP from 79BAG/N	NIK.					
BSe <sup>+</sup>						·· <u>······</u>	
BSe	(10.3)	(315)	(1320)	78	326	79HUB/HER	29750-36-5
	0 K values.	-					
B <sub>2</sub> Cl <sub>2</sub> <sup>+</sup>			<del>-,,</del>	· · · · · · · · · · · · · · · · · · ·			
B <sub>2</sub> Cl <sub>2</sub>		(223)	(934)				
220.2	From appearance			in B <sub>2</sub> Cl <sub>4</sub> assur	ned to give B2	2Cl <sub>2</sub> + + 2Cl.	
B <sub>2</sub> Cl <sub>3</sub> + B <sub>2</sub> Cl <sub>3</sub>		120	502				
D2C13	From appearance			/ in B <sub>2</sub> Cl <sub>4</sub> . 0 K	values.		
,			· · · · · · · · · · · · · · · · · · ·	- '			
B <sub>2</sub> Cl <sub>4</sub> +	10.22.0.02	101	506	117	400	927781270	12701 67 2
B <sub>2</sub> Cl <sub>4</sub>	10.32±0.02	121 <i>121</i>	506 <i>506</i>	-117 -117	-490 -490	82TN270	13701-67-2
3 <sub>2</sub> F <sub>3</sub> +							
$B_2F_3$	•	-7	-28				
	From appearance	potential of	15.40±0.01 e\	/ in B <sub>2</sub> F <sub>4</sub> . 0 K	values.		
3 <sub>2</sub> F <sub>4</sub> +							
B <sub>2</sub> F <sub>4</sub>	12.07±0.01	-66	-275	-344	-1440	82TN270	13965-73-6
		-65	-272	-343	-1437		
<sub>32</sub> н <sub>6</sub> +							
	11.38±0.03	271	1134	8.5	35.6	82TN270	19287-45-7
"H.							··
H <sub>2</sub> B BH <sub>2</sub>	11.56±0.05	275	1149	12.3	51.4		

B<sub>2</sub>H<sub>7</sub>+

228 95

From proton affinity of Diborane(6). (RN 19287-45-7). PA = ~146 kcal/mol, ~611 kJ/mol.

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
B <sub>2</sub> O <sub>2</sub> + O=BB=O	13.58 IP from 84RUS/C	204 CUR. See a	854 lso: 79BAG/NIK.	-109±2	-456±8	71JANAF	13766-28-4			
B <sub>2</sub> O <sub>3</sub> + B <sub>2</sub> O <sub>3</sub>	13.5±0.15  IP from 79BAG/8	110 <i>110</i> NIK.	460 462	-201.3 -201	-842.1 -841	79BAG/NIK	1303-86-2			
B <sub>3</sub> F <sub>3</sub> O <sub>3</sub> + · ·	(13.9±0.1)	(-244)	(-1024)	-565±1	-2365±4	71JANAF	13703-95-2			
B <sub>3</sub> H <sub>3</sub> O <sub>3</sub> + H <sub>B</sub> O BH O O O O O O O O O O O O O O O O O	(13.5±0.5)	(20)	(85)	-291	-1218	71JANAF	289-56-5			
B <sub>3</sub> H <sub>6</sub> N <sub>3</sub> +	9.88±0.02	106 112	441 467	-122.3 -116.2	-511.8 -486.2	82TN270	6569-51-3			
B <sub>3</sub> H <sub>7</sub> N <sub>3</sub> <sup>+</sup> $\begin{pmatrix} H & H & H \\ H & H & H \\ H & H & H \end{pmatrix} H^+$	From proton affin	49 uity of bora	206 zine (RN 6569-51-	3). PA = 19	4.1 kcal/mol, 81	2 kJ/mol.				
B <sub>4</sub> H <sub>10</sub> +	10.76±0.04	264	1104	16	66	82TN270	18283-93-7			
$ \begin{array}{c} B_4H_{11} + \\ \left(\begin{matrix} H_2B \\ H_2 \end{matrix}\right) & \begin{matrix} H_1 \\ H_2 \end{matrix}\right) & H_1 \end{array} $	+ From proton affin	237 ity of B <sub>4</sub> H	993 <sub>10</sub> (RN 18283-93-7	7). PA = -1-	44 kcal/mol, ~60	)2 kJ/mol.				

Table 1. Positive Ion Table - Continued

			e Ion Table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
B <sub>5</sub> H <sub>9</sub> +							
H — H — H — H — H — H — H — H — H — H —	9.90±0.04	246 253	1028 1057	17.5 24.4	73.2 102.1	82TN270	19624-22-7
B <sub>5</sub> H <sub>10</sub> +							
HH HH H	From proton affi	214 nity of B <sub>5</sub> H <sub>9</sub>	896 (RN 19624-22	:-7). PA = 169	kcal/mol, 70	7 kJ/mol.	
B <sub>5</sub> H <sub>11</sub> +		***				······································	
HAND HAND HAND HAND HAND HAND HAND HAND	(10.1) IP is onset of pho	(257) otoelectron b	(1078) and.	24.6	103.3	82TN270	18433-84-6
B <sub>6</sub> H <sub>10</sub> +				<del></del>	<del></del>		
HB H H	(9.0) IP is onset of pho	(230) stoelectron b	(963) and.	23	95	82TN270	2377-80-2
B <sub>10</sub> H <sub>14</sub> +							
HBH HBH HH	9.88±0.03	235 247	985 <i>1031</i>	7.6 18.7	31.6 78.1	82TN270	17702-41-9
Ba+					<u></u>		
Ва	5.212	163 <i>163</i>	683 <i>684</i>	43 <i>43</i>	180 <i>181</i>	82TN270	7440-39-3
BaBr+				<del></del>	<del></del>		·
BaBr	(5.0)	(88.9) <i>(91.0)</i>	(371.8) (380.8)	-26.4±10.0 -24.3±10.0		85JANAF	14832-97-4
BaBr <sub>2</sub> +					<del></del>		
BaBr <sub>2</sub>	(8.5)	(90)	(377)	-106	<b>-443</b>	82EMO/KIE	10553-31-8
-	IP is onset of pho 79LEE/POT2.	(93) toelectron ba	(391) and (79LEE/P	-102 OT). See also	<i>–429</i> : 82EMO/KIE	3,	
			<del></del>				<del></del>

Table 1. Positive Ion Table - Continued

			ve ion table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
BaCl <sup>+</sup>							
BaCl	5.01±0.010	81 <i>82</i>	340 <i>341</i>	-34 -34	-143 -142	85JANAF	14832-99-6
BaCl <sub>2</sub> +							
BaCl <sub>2</sub>	(9.4) IP is onset of photo 0 K values.	(97) toelectron	(405) band (79LEE/	–120 POT, 79LEE/P	<i>-502</i> OT2). See als	82EMO/KIE o: 82EMO/KIE.	10361-37-2
BaF+		·——					
BaF	(4.8±0.3)	(34) <i>(34)</i>	(144) <i>(142)</i>	-77 -77	-324 -326	82TN270	13966-70-6
Ва <b>НО <sup>+</sup></b> . ВаОН	4.35±0.3 IP from 81MUR.	45 See also: 8	189 1FAR/SRI.	-55±4	-230±17	81MUR	12009-08-4
n							
BaH <sub>2</sub> O <sub>2</sub> + Ba(OH) <sub>2</sub>	(8) IP from 81FAR/S	(44) RI.	(186)	-140	-586	82TN270	17194-00-2
BaI +							
BaI	(5.0±0.3)	(105.2) (105.9)	(440.0) <i>(443.1)</i>	-10.1±20.1 -9.4±20.1		85JANAF	12524-20-8
BaI <sub>2</sub> +							
BaI <sub>2</sub>	(8.24)  IP is onset of pho	(116) <i>(117)</i>	(487) (490)	-74 -73	-308 -305	82EMO/KIE	13718-50-8
	TP is onset of pho		Uand (19LEE)		——————————————————————————————————————	O. OZEMO/ME.	
BaO + BaO	6.91±0.06	129.8 <i>130.3</i>	542.9 <i>545</i> .1	-29.6±2 -29.1±2	-123.8±8 -121.6±8	85JANAF	1304-28-5
	See also: 81MUR	·					
BaO <sub>4</sub> W <sup>+</sup> BaWO <sub>4</sub>	(9.8±0.5)	(-181)	(-757)	-407	-1703	76DEL/HAL	
Be+							
Be Be	9.322	<u>292.5</u> <u>291.5</u>	1223.7 1219.4	77.5 76.5	324.3 <i>320.0</i>	82TN270	7440-41-7
BeCl <sub>2</sub> +		<del></del>					····
BeCl <sub>2</sub>	(11.15) IP is onset of pho	(171) toelectron	(717) band (79LEE/	-86 POT2).	-359	82TN270	7787-47-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(I		$\Delta_{\mathbf{f}}H(Ne% (\mathbf{r}))$		Neutral	CAS registry				
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number				
BeF +				-40.6±2 -41.2±2	-169.9±8 -172.2±8	85JANAF	13597-96-1				
	A value of 168 kcal/mol, 703 kJ/mol is obtained for the enthalpy of formation of BeF $^+$ based on experimental ionization potential values of 9.1 $\pm$ 0.5 or 9.3 $\pm$ 1.0 eV; the enthalpy of formation based on an appearance potential of 15.4 $\pm$ 0.4 eV in BeF $_2$ is 147 kcal/mol, 615 kJ/mol.										
BeF <sub>2</sub> +	(14.6±0.5)	(147)	(615)	-190	<b>-</b> 794	82TN270	7787-49-7				
Ве <b>Н</b> <sup>+</sup> ВеН	8.21±0.04	272 271	1136 <i>1132</i>	82 <i>81.2</i>	344 <i>339.8</i>	79HUB/HER	13597-97-2				
BeO + BeO	(10.1±0.4)	(265.5) (264.9)	(1110.9) (1108.5)	32.6±3 32.0±3	136.4±13 134.0±13	85JANAF	1304-56-9				
Be <sub>2</sub> O +	(10.5±0.5)	(227)	(950)	-15±10	-63±42	71JANAF	12009-99-3				
Be <sub>2</sub> O <sub>2</sub> + (BeO) <sub>2</sub>	(10.8±0.7)	(151)	(632)	-98±12	-410±50	71JANAF	70478-90-9				
Be <sub>3</sub> O <sub>3</sub> + (BeO) <sub>3</sub>	(10.9±0.6)	(-1)	(-2)	-252±9	-1054±38	71JANAF	61279-73-0				
Be <sub>4</sub> O <sub>4</sub> + (BeO) <sub>4</sub>	(21.0)	(-126)	(-529)	-380±12	-1590±50	71JANAF	61279-74-1				
Be <sub>5</sub> O <sub>5</sub> + (BeO) <sub>5</sub>	(-11)	(~-251)	(~-1052)	-505±23	-2113±95	71JANAF	61279-75-2				
Be <sub>6</sub> O <sub>6</sub> + (BeO) <sub>6</sub>	(-11)	(239)	(~-1000)	-492±22	-2061±92	71JANAF	61279-76-3				
Bi <sup>+</sup> Bi	7.289	218 <i>217.7</i>	910 <i>910.7</i>	49 <i>49.6</i>	207 207.4	82TN270	7440-69-9				
BiCl <sub>3</sub> + BiCl <sub>3</sub>	(10.4)	(176) (177)	(738) (739)	-64 -63	-266 -264	82TN270	7787-60-2				
	IP is onset of pho	oelectron b	and (83NOV/	POT). See also	o: 83OZG.						
ВіН <sub>3</sub> <sup>+</sup> ВіН <sub>3</sub>	(10.1)	(288)	(1204)	55	230	64GUN	18288-22-7				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
BiO+							
BiO	(9.0±0.5)	(236) <i>(</i> 236)	(989) <i>(988)</i>	29±3 <i>29</i>	121±13 <i>120</i>	83PED/MAR	1332-64-5
BiS+							
BiS	(8.7±0.5) 0 K values.	(243)	(1017)	42	178	79HUB/HER	12048-34-9
BiTe +	•						
ВіТе	(8.4±0.5) 0 K values.	(235)	(983)	41	173	79HUB/HER	12010-57-0
Bi <sub>2</sub> +							
Bi <sub>2</sub>	(7.3±0.5)	(221) (221)	(924) <i>(926)</i>	53 <i>53.1</i>	220 <i>222.2</i>	82TN270	12187-12-1
Bk+			<del></del>				
Bk	6.30±0.09	219	918	74	310	85KLE/WAR	7440-40-6
Br <sup>+</sup>							
Br	11.814	299.2 <i>300.6</i>	1251.7 <i>1257.8</i>	26.7 28.2	111.9 <i>117.9</i>	82BAU/COX	10097-32-2
	See also: 81KIM/I	CAT.					
BrCa +							
CaBr	5.54 IP from 84MEY/S	123 CH. 0 K val	<i>513</i> ues.	<b>5</b>	-21	79HUB/HER	10024-43-8
BrCl+							
BrCl	11.01	257	1077	4	15	82TN270	13863-41-7
	IP from 84DYK/J	<i>259</i> OS.	1084	5	22		
BrCl <sub>5</sub> N <sub>3</sub> P <sub>3</sub> +		·	·-				
CI <sub>2</sub> P Br	(9.83±0.1)	(52)	(218)	-174	<b>-</b> 730	*EST	14740-93-3
BrCs +							
CsBr	7.72±0.05	130 <i>133</i>	545 <i>554</i>	-48 <i>-45.5±1.8</i>	-200 -190.4±7.5	84PAR/WEX	7787-69-1
BrF+		· · · · · · · · · · · · · · · · · · ·					<del>-</del>
BrF	11.77±0.01	257.4 259.3	1077.1 1084.8	-14.0±0.4 -12.1±0.4		85JANAF	13863-59-7
	See also: 84DYK/.	ros.					

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued							
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number	
BrF <sub>3</sub> <sup>+</sup> BrF <sub>3</sub>	(12.15±0.04)	(219) <i>(222)</i>	(917) (928)	-61.1 <i>-58.4</i>	-255.6 <i>-244.4</i>	82TN270	7787-71-5	
BrF <sub>5</sub> + BrF <sub>5</sub>	(13.17±0.01)	(201) (205)	(842) <i>(858)</i>	~103 <i>~99</i>	-429 -413	82TN270	7789-30-2	
BrH <sup>+</sup> HBr	11.66±0.03  IP from 79HUB/F	260 <i>262</i> HER, 77ROS	1089 <i>1096</i> S/DRA, 82LE	-9 -7 EV/LIA. See als	-36 -29 o: 81KIM/KA	82TN270 T.	10035-10-6	
BrH <sub>2</sub> + H <sub>2</sub> Br	From proton affin PA = 139 kcal/mo	•		-6) (84POL/ML	IN, 85MCM/F	KEB).		
BrH3Si <sup>+</sup> SiH3Br	10.6 IP is onset of pho	(226) toelectron b	(945) and.	−19±4	-78±17	82JANAF	13465-73-1	
BrI <sup>+</sup> IBr	9,790±0.004 See also: 84DYK/	235.5 237.7 JOS, 71POT	985.4 <i>994.4</i> 7PRI.	9.8 11.9	40.8 <i>49.8</i>	82TN270	7789-33-5	
BrIn <sup>+</sup> InBr	(9.09)	(202) (204)	(845) <i>(854)</i>	-8 -6	-32 -23	79HUB/HER	14280-53-6	
BrK <sup>+</sup> KBr	7.85±0.1	138 <i>140</i>	577 586	-43 -41	180 171	82TN270	7758-02-3	
Br <b>Li <sup>+</sup></b> LiBr	(8.7)  IP is onset of phot	(164) <i>(166)</i> coelectron ba	(685) <i>(693)</i> and.	-37±3 -35±3	-154±13 -146±13	71JANAF	7550-35-8	
BrNO <sup>†</sup> NOBr	10.17±0.03	254	1063	20	82	82BAU/COX	13444-87-6	
BrNa <sup>+</sup> NaBr	8.31±0.1	157 <i>160</i>	659 668	-34 -32	-143 -134	82TN270	7647-15-6	
BrO + BrO	- (10.2)  IP is onset of phot	(265) (267) oelectron ba	(1110) (1118) and.	30.1 <i>31.9</i>	125.8 <i>133.5</i>	82TN270	15656-19-6 14380-62-2	

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Continu	ieu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	lon) I kJ/mol	Δ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number
BrRb <sup>+</sup> RbBr	7.94±0.03	139 <i>142</i>	583 <i>592</i>	-43.7 -41.4	-182.8 -173.4	82TN270	7789-39-1
BrSi +							
SiBr	(7.3)	(224.6) (225.9)	(939.6) <i>(945</i> .1)		235.3±46.0 240.8±46.0	85JANAF	14791-57-2
BrSr <sup>+</sup>				<del></del>			
SrBr .	(5.5)	(106) <i>(108)</i>	(442) <i>(450)</i>	-21±10 -19.2±10	-89±42 -80.4±42	85JANAF	14519-13-2
BrTl <sup>+</sup>			····				
TiBr	9.14±0.02	202 204	844 <i>853</i>	-9 -7	-38 <i>-29</i>	82TN270	7789-40-4
	See also: 83BAN/	BRI.					
Br <sub>2</sub> + Br <sub>2</sub>	10.515±0.005	250 253	1046 <i>1061</i>	7.4 11	31.0 <i>46</i>	82BAU/COX	7726-95-6
	Cited IP leads to I 10.865±0.005 eV. I See also: 81KIM/F	IP from 84	<sub>2g</sub> ); formation VAN/DEL2, 84	of Br <sub>2</sub> <sup>+</sup> ( <sup>2</sup> π <sub>1/2</sub> DYK/JOS, 77F	g) requires ROS/DRA.		
Br <sub>2</sub> Ca <sup>+</sup>							
CaBr <sub>2</sub>	≤9.68	≤130	≤545	-93	-389	82TPIS	7789-41-5
	IP is onset of phot	≤134 :oelectron	<i>≤560</i> band (79LEE/I	<i>-89±2</i> OT2).	<i>−374±9</i>		
Br <sub>2</sub> Cl <sub>4</sub> N <sub>3</sub> P <sub>3</sub> +			<del></del>	······································			
Cl <sub>2</sub> P N P Cl	(9.80±0.1)	(63)	(265)	-163	-681	*EST	15964-99-5
Br <sub>2</sub> F <sub>4</sub> N <sub>3</sub> P <sub>3</sub> +							
F2 P Br	(10.63±0.03) IP from 81CLA/S0	(-135) OW.	(-563)	-380	-1589	•EST	29871-63-4
Br <sub>2</sub> Fe <sup>+</sup>	***						<del>-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>
FcBr <sub>2</sub>	(10.7±0.5)	(237)	(991)	-10±0.5	-41±2	71JANAF	7789-46-0
Br <sub>2</sub> Ge +					· · · · · · · · · · · · · · · · · · ·		
GeBr <sub>2</sub>	(9.60±0.05)	(206)	(863)	-15	-63	82TN270	24415-00-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
Br <sub>2</sub> H <sub>2</sub> Si <sup>+</sup>							
SiH <sub>2</sub> Br <sub>2</sub>	(10.7)	(201)	(842)	-45±4	-190±17	82JANAF	13768-94-0
	IP is onset of pho	otoelectron b	and.				
Br <sub>2</sub> Hg <sup>+</sup>							
HgBr <sub>2</sub>	10.560±0.003	223	934	-20±2	-85±8	71JANAF	7789-47 <b>-</b> 1
	Cited ionization	potential (83	LIN/TZE) re	fers to formatio	on of HgBr <sub>2</sub> +	( <sup>2</sup> II <sub>3/2 g</sub> ).	
	IP for formation	of HgBr <sub>2</sub> ' (	<sup>(2Π</sup> 1/2 g) is 10	.8846±0.0012 e	V. See also: 8	ILEE/POT.	
Br <sub>2</sub> Li <sub>2</sub> +							
₿r	(≤10.05±0.08)	(≤112)	(≤469)	-120	-501	81LIN/BES	12380-84-6
Li Br	,	` ,	` ,				
Br							
Br <sub>2</sub> Mg <sup>+</sup>							
MgBr <sub>2</sub>	10.47	169	708	-72	-302	82TPIS	7789-48-2
_		173	723	-69±4	-287±15		
	IP is onset of pho	toelectron b	and (79LEE/	POT2).			
Br <sub>2</sub> OS <sup>+</sup>							
sobr <sub>2</sub>	(10.1)	(204)	(851)	-29	-123	82TN270	507-16-4
	ID is successful.	(209)	(872)	-24	-102		
	IP is onset of pho	toelectron b	and.				
Br <sub>2</sub> Pb <sup>+</sup>							
PbBr <sub>2</sub>	9.6	(196)	(822)	-25±1	-104±6	75JANAF	10031-22-8
	IP is onset of pho	toelectron b	and (84NOV/	POT2, 82LEV/	LIA).		
Br <sub>2</sub> S <sub>2</sub> +							
S <sub>2</sub> Br <sub>2</sub>	(9.23±0.03)	(221)	(923)	8	33	82TN270	13172-31-1
	IP from 81KAU/	VAH.					
Br <sub>2</sub> Se <sup>+</sup>							-
SeBr <sub>2</sub>	9.07	204	854	-5	-21	82TN270	22987-45-7
Br <sub>2</sub> Sn <sup>+</sup>							
SnBr <sub>2</sub>	9.0	201	839	<b>-</b> 7	-29	82TPIS	10031-24-0
-	IP is onset of pho	toelectron b	and (84NOV/	POT2, 82LEV/	LIA).		
Br <sub>2</sub> Sr <sup>+</sup>							
SrBr <sub>2</sub>	(9.11)	(114)	(477)	-96	-402	82TPIS	10476-81-0
-		(118)	(492)	-92±3	-387±11		
	IP is onset of pho	toelectron b	and (79LEE/I	OT2). See also	o: 82EMO/KII	3.	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	ion) i kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
Br <sub>3</sub> Cl <sub>3</sub> N <sub>3</sub> P <sub>3</sub> +				<del></del>			
Br CI P Br	(9.72±0.1)	(73)	(306)	~151	-632	*EST	16032-52-3
Br CI				·- <u></u>			
Br <sub>3</sub> F <sub>3</sub> N <sub>3</sub> P <sub>3</sub> +							
Br P Br F Br	(10.37±0.03) IP from 81CLA/S	(-74) sow.	(-311)	-314	-1312	*EST	67336-18-9
Br <sub>3</sub> Ga <sup>+</sup>	<del></del>		<del> </del>	······································			
GaBr <sub>3</sub>	10.40	170	710	-70	-293	82TN270	13450-88-9
Br3In+ InBr3	(10.0) IP is onset of pho	(163) toelectron	(683) band.	-67	-282	82TN270	13465-09-3
Br <sub>3</sub> La <sup>+</sup>							
LaBr <sub>3</sub>	(9.85) IP is onset of pho	(87) toelectron	(364) band (83RUS/	−140±2 GOO).	−586±7	78TPIS	13536-79-3
Br <sub>3</sub> OP <sup>+</sup>				<del></del>			
POBr <sub>3</sub>	10.75±0.02	151 <i>161</i>	632 <i>673</i>	-97 -87	-405 -364	71JANAF	7789-59-5
Br <sub>3</sub> P+							
PBr <sub>3</sub>	9.7	(190) <i>(196)</i>	(797) (821)	-33 -27	-139 -115	82TN270	7789-60-8
	IP is onset of pho		<i>(821)</i> band.	-21	-115		
Br <sub>4</sub> Cl <sub>2</sub> N <sub>3</sub> P <sub>3</sub> +					<del></del>		
Br <sub>2</sub> P P Br	(9.60±0.1)	(82)	(343)	-139	<b>-583</b>	*EST	15965-00-1
Br CI							·-
Br <sub>4</sub> Hf <sup>+</sup>						04.00-	40.000
HfBr <sub>4</sub>	(10.9) IP is onset of pho	(87) toelectron	(365) band.	<b>-1</b> 64	-687	81SPE	13777-22-5
Br <sub>4</sub> Sn <sup>+</sup>							
SnBr <sub>4</sub>	10.6	169	708	-75 -68	~315	82TN270	7789-67-5
	IP is onset of pho	177 toelectron	<i>739</i> band.	-68	-284		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Br <sub>4</sub> Ti <sup>+</sup>							
TiBr <sub>4</sub>	10.3	(90)	(376)	-148±1	-618±5	71JANAF	7789-68-6
	IP is onset of pho	toelectron l	oand.				
Br <sub>4</sub> Zr <sup>+</sup>							
ZrBr <sub>4</sub>	(10.7)	(93)	(387)	-154±2	-645±8	78JANAF	13777-25-8
	IP is onset of pho	toelectron l	oand.				
Br <sub>5</sub> CIN <sub>3</sub> P <sub>3</sub> +							
اک N. Cl	(0.47, 0.4)	(01)	(200)	100	504	*Ecm	15(00.07.4
Br <sub>2</sub> P P Br	(9.47±0.1)	(91)	(380)	-128	-534	*EST	15608-37-4
Br <sub>2</sub> P P Br							
Br <sub>2</sub>							
Br <sub>5</sub> W <sup>+</sup>							
WBr <sub>5</sub>	(8.3±0.2)	(144)	(602)	-48±5	-199±21	71JANAF	13470-11-6
		(153)	(638)	- <i>39</i>	-163		
Br <sub>6</sub> N <sub>3</sub> P <sub>3</sub> +							
BSSSNSBIS	9.62±0.03	(82)	(343)	-140	-585	*EST	13701-85-4
	IP from 81CLA/S		(0.5)	•			
P							
Br <sub>2</sub>							
SrgRe3 +							
Br Br	(8.4)	(125)	(521)	-69	-289	82TN270	33517-16-7
Br Br	IP is onset of pho						
Br Br Br							
;+	<del></del>						
С	11.260	431.0	1803.2	171.3	716.7	82TN270	7440-44-0
		429.7	1797.6	170.0	711.2		
Br <sup>+</sup>							
CBr	(10.43±0.02)	(362.5)	(1516.7)	122.0±15	510.4±63	85JANAF	
		(363.4)	(1520.6)	122.9±15	514.3±63		
CBrClF <sub>2</sub> +						· · · · · · · · · · · · · · · · · · ·	
CF <sub>2</sub> BrCl	(≤11.83)	(≤168)	(≤703)	-105±2	<b>-</b> 438±8	78KUD/KUD	353-59-3
BrCl <sub>3</sub> +					***************************************		
CCl <sub>3</sub> Br	(10.6)	(234)	(980)	-10.2±0.6	-42.7±2.4	77PED/RYL	75-62-7
<del>-</del>	IP is onset of pho	toelectron b	and (81NOV/	CVI3).			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(1$	lon)	$\Delta_f H(Ne)$	utral)	Neutral	CAS registry
Neutral	eV	•	kI/mol	kcal/mol		reference	number
CBrF <sub>3</sub> +							
CF <sub>3</sub> Br	11.4	108	450	-155	-650	78KUD/KUD	75-63-8
	What was after a	111	463	-152	-637		
	IP is onset of phot	oelectron	band. See also:	82BOC/WII.			
CBrN+							
BrCN	11.84±0.01	316	1323	43±1	181±4	77PED/RYL	506-68-3
CBr <sub>2</sub> Cl <sub>2</sub> +							
CCI <sub>2</sub> Br <sub>2</sub>	(10.4)	(242)	(1012)	2±2	9±8	78KUD/KUD	594-18-3
	IP is onset of phot	oelectron	band.				
CBr <sub>2</sub> F <sub>2</sub> +							
CF <sub>2</sub> Br <sub>2</sub>	11.07±0.03	165	689	-91±2	-379±8	78KUD/KUD	75-61-6
CBr <sub>2</sub> O <sup>+</sup>				· · · · · · · · · · · · · · · · · · ·			·
COBr <sub>2</sub>	(10.8)	(222)	(929)	~27±0.5	-113±2	77PED/RYL	593-95-3
	IP is onset of phot	oelectron	band.				
CBr <sub>3</sub> +							
CBr <sub>3</sub>	(8.2)	(239)	(1000)	49.6	207.5	*EST	
	From appearance	potential (	(10.47±0.02 eV)	in CBr <sub>4</sub> ; IP is	$\Delta_{\mathbf{f}}H(Ion)$ - $\Delta_{\mathbf{f}}$	H(Neutral).	
CBr <sub>3</sub> F <sup>+</sup>							
CFBr <sub>3</sub>	10.67±0.01	190	793	-56±2	-236±8	78KUD/KUD	353-54-8
CBr <sub>4</sub> +							
CBr <sub>4</sub>	(10.31±0.02)	(258)	(1079)	20.1±0.8	83.9±3.4	84BIC/MIN	558-13-4
		(265)	(1109)	27.2	113.8		
CCe +							
CCe	(7.5±1.0)	(336)	(1406)	163	682	82TN270	12011-58-4
CCI+		<del></del>					
CCI	(8.9±0.2)	(297)	(1243)	(92)	(384)		
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from ap	pearance p	otential deterr				
	is $\Delta_{\mathbf{f}}H(\text{Ion})$ - IP. 1	P from 82	HEP/TRE.				
CCIF+							
CCIF	(10.7)	(243)	(1017)	-5±7	-20±29	85LIA/KAR	1691-88-9
	$\Delta_f H(\text{Ion})$ from ap						
	$\Delta_{\mathbf{f}}H(\text{Ion})-\Delta_{\mathbf{f}}H(\text{Ne})$	eutrai). Sec	:: &>LIA/KAR	(re-evaluated h	ere). 		
CCIF <sub>2</sub> +							
CCIF <sub>2</sub>	(8.3)	126	528	-66	-275	*EST	1691-89-0
	Cited heat of form						
			"+				
	$(C_2H_5^+ + CF_2C_1^-)$ potential of ion (1)						

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$		ΔεΗΩ	Veutral)	Neutral	CAS registry	
Neutral	eV	kcal/m		_	ol kJ/mol	reference	number
CCIF <sub>3</sub> +							7' - 1
CF <sub>3</sub> CI	12.39	116	485	-169.7±0	0.6 -710.0±2.3	77PED/RYL	75-72-9
		117	491	-168	-704		
	See also: 85KIS	MOR.					
CCIN+							
CICN	12.34±0.01	318	1329	33.0	138.0	77PED/RYL	506-77-4
		<i>317</i>	1328	32.8	137.3		
	Cited ionization						
	CNCI <sup>+</sup> ( <sup>2</sup> 11 <sub>3/2</sub> )	. Formation	of CNC1 + ( <sup>2</sup> π <sub>1</sub>	/2) requires 1	2.37 eV.		
CCINO+							
CINCO	(10.72±0.01)	(253)	(1057)	5.5	23.0	83DEW/RZE	13858-09-8
CCl <sub>2</sub> +					<del></del>		·····
CCI <sub>2</sub>	10.36	278	1163	39	163	85LIA/KAR	1605-72-7
-	$\Delta_{\mathbf{f}}H( ext{Ion})$ from	appearance					·• ·
	Cited IP is $\Delta_f H$						
CCl <sub>2</sub> F+					7777731.31		***************************************
CCl <sub>2</sub> F	(8.0)	(168)	(703)	-17.5	-73	*EST	1691-90-3
4							F)
2	From observation	on of near-t	hermoneutral re	action: (C <sub>2</sub> H	5 + + CF <sub>2</sub> Cl <sub>2</sub> →	$CCl_2F^+ + C_2H_5$	F)
L	From observation (77LIA/AUS).	on of near-ti Appearance	hermoneutral re potential deter	action: (C <sub>2</sub> H minations lea		CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol,	F)
	From observation (77LIA/AUS).	on of near-ti Appearance	hermoneutral re potential deter	action: (C <sub>2</sub> H minations lea	5 <sup>+</sup> + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17:	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol,	F)
CCl <sub>2</sub> F <sub>2</sub> +	From observation (77LIA/AUS). 732 kJ/mol, for the	on of near-the Appearance the heat of f	hermoneutral re potential deter formation of this	eaction: $(C_2H_2)$ minations leads ion. IP is $\Delta_f$	5 <sup>+</sup> + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: H(Ion) - Δ <sub>f</sub> H(N	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol, eutral).	
	From observation (77LIA/AUS).	on of near-ti Appearance the heat of f	hermoneutral recommendation of this	eaction: $(C_2H_1)$ minations least ion. IP is $\Delta_f$ -114.1±1	$5^+ + CF_2CI_2 \rightarrow$ d to values of 17: $H(Ion) - \Delta_f H(N)$ 3 -477.5±5.6	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol,	75-71-8
CCl <sub>2</sub> F <sub>2</sub> +	From observation (77LIA/AUS). 732 kJ/mol, for the	Appearance the heat of f	hermoneutral re potential deter formation of this	eaction: $(C_2H_2)$ minations leads ion. IP is $\Delta_f$	5 <sup>+</sup> + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: H(Ion) - Δ <sub>f</sub> H(N	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol, eutral).	
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the first formula for the first formula for the first formula fo	Appearance the heat of f	hermoneutral recommendation of this	eaction: $(C_2H_1)$ minations least ion. IP is $\Delta_f$ -114.1±1	$5^+ + CF_2CI_2 \rightarrow$ d to values of 17: $H(Ion) - \Delta_f H(N)$ 3 -477.5±5.6	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol, eutral).	
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for statement of the statement o	Appearance the heat of f	hermoneutral repotential deter commation of this 656 661	eaction: ( $C_2H_1$ ) minations least ion. IP is $\Delta_f$ $-114.1\pm 1$ $-113$	$_{5}$ <sup>+</sup> + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17. H(Ion) - $_{6}$ H(N)  -3 -477.5±5.6 -473	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).	75-71-8
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the first formula for the first formula for the first formula fo	Appearance the heat of f  157 158 MOR.  (210)	hermoneutral repotential determination of this  656 661 (880)	eaction: $(C_2H)$ minations leads ion. IP is $\Delta_6$ -114.1±1 -113	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $_{4}^{+}$ (Ion) - $_{4}^{+}$ (H(N) $_{4}^{-}$ 3 -477.5±5.6 $_{4}^{-}$ 73	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol, eutral).	
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the second s	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211)	hermoneutral repotential determination of this  656 661  (880) (882)	eaction: ( $C_2H_1$ ) minations least ion. IP is $\Delta_f$ $-114.1\pm 1$ $-113$	$_{5}$ <sup>+</sup> + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17. H(Ion) - $_{6}$ H(N)  -3 -477.5±5.6 -473	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).	75-71-8
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + CCCl <sub>2</sub> O +	From observation (77LIA/AUS). 732 kJ/mol, for statement of the statement o	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211)	hermoneutral repotential determination of this  656 661  (880) (882)	eaction: $(C_2H)$ minations leads ion. IP is $\Delta_6$ -114.1±1 -113	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $_{4}^{+}$ (Ion) - $_{4}^{+}$ (H(N) $_{4}^{-}$ 3 -477.5±5.6 $_{4}^{-}$ 73	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).	75-71-8
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + CCl <sub>2</sub> S +	From observation (77LIA/AUS). 732 kJ/mol, for the second s	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211) otoelectron	hermoneutral repotential determination of this 656 661 (880) (882) band.	eaction: $(C_2H)$ minations leads ion. IP is $\Delta_6$ -114.1±1 -113	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $_{4}^{+}$ (Ion) - $_{4}^{+}$ (H(N) $_{4}^{-}$ 3 -477.5±5.6 $_{4}^{-}$ 73	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).	75-71-8
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the second s	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211)	hermoneutral repotential determination of this  656 661  (880) (882)	eaction: $(C_2H)$ minations leads ion. IP is $\Delta_6$ -114.1±1 -113	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $_{4}^{+}$ (Ion) - $_{4}^{+}$ (H(N) $_{4}^{-}$ 3 -477.5±5.6 $_{4}^{-}$ 73	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).	75-71-8
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the second s	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211) otoelectron	hermoneutral repotential determination of this 656 661 (880) (882) band.	eaction: $(C_2H_1)$ minations leads ion. IP is $\Delta_f$ = -114.1±1 -113	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: H(Ion) - $_{6}$ H(N)  .3 -477.5±5.6  -473	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX	75-71-8 75-44-5
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the second s	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211) otoelectron	hermoneutral repotential determination of this 656 661 (880) (882) band.	eaction: $(C_2H_1)$ minations leads ion. IP is $\Delta_f$ = -114.1±1 -113	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: H(Ion) - $_{6}$ H(N)  .3 -477.5±5.6  -473	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX	75-71-8 75-44-5 463-71-8
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for statement of the statement o	on of near-ti Appearance the heat of f  157 158 MOR.  (210) (211) otoelectron  215	hermoneutral repotential determination of this 656 661 (880) (882) band.	eaction: $(C_2H)$ minations leases ion. IP is $\Delta_f$ $-114.1\pm 1$ $-113$ $-53$ $-52$ $-6$ 19	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17. H(Ion) - $\Delta_{f}$ H(N)  .3 -477.5±5.6 -473  -220 -218	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX  79JOS	75-71-8 75-44-5 463-71-8 3170-80-7
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for statement of the statement o	on of near-ti Appearance the heat of f  157 158 MOR.  (210) (211) otoelectron  215  (199) ed on the ob	hermoneutral repotential determination of this 656 661 (880) (882) band.  900 (831) servation of the	eaction: $(C_2H_1)$ minations leases ion. IP is $\Delta_6$ $-114.1\pm 1$ $-113$ $-53$ $-52$ $-6$ 19 reaction (H <sub>3</sub> )	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: H(Ion) - $_{4}$ H(N) $_{3}^{-}$ -477.5±5.6 $_{-473}^{-}$ $_{220}^{-}$ -218 $_{-27}^{-}$ $_{79}^{-}$ O + + CFCl <sub>3</sub> →	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX	75-71-8 75-44-5 463-71-8 3170-80-7
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for the second of the second	on of near-ti Appearance the heat of f 157 158 MOR. (210) (211) otoelectron 215 (199) ed on the ob	hermoneutral repotential determination of this commation of this 656 661 (880) (882) band.  900 (831) servation of the ec-C <sub>3</sub> H <sub>7</sub> <sup>+</sup> + C	eaction: $(C_2H_1)$ rminations leads ion. IP is $\Delta_6$ $-114.1\pm 1$ $-113$ $-53$ $-52$ $-6$ $19$ reaction (H <sub>3</sub> CFCl <sub>3</sub> $\rightarrow$ CCl <sub>3</sub>	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $H(Ion)$ - $\Delta_{f}H(N)$ $A_{f}H(N)$	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> 5 kcal/mol, eutral).  77PED/RYL  82BAU/COX  79JOS  82MCM/GOL CCl <sub>3</sub> + + HF + F	75-71-8 75-44-5 463-71-8 3170-80-7
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for some set of phonon set of	on of near-ti Appearance the heat of f  157 158 MOR.  (210) (211) otoelectron  215  (199) ed on the observence of (she heat of for	(880) (882) band.  (831) servation of the ce-C <sub>3</sub> H <sub>7</sub> + + Commation between	eaction: $(C_2H_1)$ minations leads ion. IP is $\Delta_6$ $-114.1\pm 1$ $-113$ $-53$ $-52$ $-6$ $19$ reaction (H <sub>3</sub> EFCl <sub>3</sub> $\rightarrow$ CCl <sub>3</sub> en 197 and 200	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $H(Ion)$ - $\Delta_{f}H(N)$ $A_{f}H(N)$	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX  79JOS  82MCM/GOL CCl <sub>3</sub> <sup>+</sup> + HF + H	75-71-8 75-44-5 463-71-8 3170-80-7
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub> CCl <sub>3</sub> + CCl <sub>3</sub> +	From observation (77LIA/AUS). 732 kJ/mol, for some set of phonomeral (11.4)  IP is onset of phonomeral (7.8) $\Delta_f H(\text{Ion})$ is base and lack of occur which brackets the state of the set of the se	on of near-ti Appearance the heat of f  157 158 MOR.  (210) (211) otoelectron  215  (199) ed on the observence of (she heat of for	(880) (882) band.  (831) servation of the ce-C <sub>3</sub> H <sub>7</sub> + + Commation between	eaction: $(C_2H_1)$ minations leads ion. IP is $\Delta_6$ $-114.1\pm 1$ $-113$ $-53$ $-52$ $-6$ $19$ reaction (H <sub>3</sub> EFCl <sub>3</sub> $\rightarrow$ CCl <sub>3</sub> en 197 and 200	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $H(Ion)$ - $\Delta_{f}H(N)$ $A_{f}H(N)$	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX  79JOS  82MCM/GOL CCl <sub>3</sub> <sup>+</sup> + HF + H	75-71-8 75-44-5 463-71-8 3170-80-7
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + COCl <sub>2</sub> CCl <sub>2</sub> S + CSCl <sub>2</sub>	From observation (77LIA/AUS). 732 kJ/mol, for some set of phonomeral (11.4)  IP is onset of phonomeral (7.8) $\Delta_f H(\text{Ion})$ is base and lack of occur which brackets the state of the set of the se	on of near-ti Appearance the heat of f  157 158 MOR.  (210) (211) otoelectron  215  (199) ed on the observence of (she heat of for	hermoneutral repotential determination of this community of the community of the community of the community of the correction of the correction of the correction between $\Delta_f H(\text{Neutra})$	eaction: $(C_2H_1)$ minations leads ion. IP is $\Delta_6$ $-114.1\pm 1$ $-113$ $-53$ $-52$ $-6$ $19$ reaction (H <sub>3</sub> EFCl <sub>3</sub> $\rightarrow$ CCl <sub>3</sub> en 197 and 200	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $H(Ion)$ - $\Delta_{f}H(N)$ $_{3}^{-}$ -477.5±5.6 $_{473}^{-}$ $_{-220}^{-}$ $_{-218}^{-}$ $_{-27}^{-}$ $_{79}^{-}$ O + + CFCl <sub>3</sub> → + + C <sub>3</sub> H <sub>7</sub> F) O kcal/mol, 824 ar atal value: 8.28 e <sup>-</sup>	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX  79JOS  82MCM/GOL CCl <sub>3</sub> + HF + H ad 837 kJ/mol V.	75-71-8 75-44-5 463-71-8 3170-80-7 H <sub>2</sub> O)
CCl <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> Cl <sub>2</sub> CCl <sub>2</sub> O + CCl <sub>2</sub> S + CSCl <sub>2</sub> CCl <sub>3</sub> + CCl <sub>3</sub> + CCl <sub>3</sub> F+	From observation (77LIA/AUS). 732 kJ/mol, for the second of the second	on of near-ti- Appearance the heat of f  157 158  MOR.  (210) (211) otoelectron  215  (199) ed on the observence of (so the heat of for the heat of the h	(880) (882) band.  (831) servation of the ce-C <sub>3</sub> H <sub>7</sub> + + Commation between	eaction: (C <sub>2</sub> H) minations lea ion. IP is Δ <sub>f</sub> -114.1±1  -113  -53  -52  -6  19  reaction (H <sub>3</sub> EFCl <sub>3</sub> → CCl <sub>3</sub> in 197 and 200 il). Experiment	$_{5}^{+}$ + CF <sub>2</sub> Cl <sub>2</sub> → d to values of 17: $H(Ion)$ - $\Delta_{f}H(N)$ $A_{f}H(N)$	CCl <sub>2</sub> F <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> S kcal/mol, eutral).  77PED/RYL  82BAU/COX  79JOS  82MCM/GOL CCl <sub>3</sub> <sup>+</sup> + HF + H	75-71-8 75-44-5 463-71-8 3170-80-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry		
Neutral	eV	∆ <sub>f</sub> H( kcal/mc	l kJ/mol	kcal/mol		reference	number
CCI <sub>4</sub> +						······································	
CCI <sub>4</sub>	11.47±0.01	241	1010	~23.2±0.7	-97.1±3	77PED/RYL	56-23-5
		242	1012	-22.7	-95.0		
	See also: 82VON/	ASB, 81K	IM/KAT.				
CCo+							
CCo		(364)	(1524)				
	· $\Delta_f H(\text{Ion})$ from ph	otodissoc	iation onset to	give Co + (86H	ET/FRE).		
CF <sup>+</sup>					<del></del>		
CF	9.11±0.01	271.1	1134.2	61.0±2	255.2±8	85JANAF	3889-75-6
		270.2	1130.6	60.1±2	231.6±8		
	IP from 84DYK/L	EW. Sec	also: 82HEP/TF	Œ.			
CFN+			<del></del>				
FCN	13.32±0.01	316	1321	9±4	36±17	71JANAF	1495-50-7
CFO+	<del> </del>	<del></del>	<del></del>				
FCO	8.76±0.32	(160)	(669)	-42±4	-175±16	81DYK/JON2	
	IP from 81DYK/J		(33.7)		2.0223		
CF <sub>2</sub> +							
CF <sub>2</sub>	11.42±0.01	214	897	-49±3	-205±12	85LIA/KAR	2154-59-8
CF <sub>2</sub> O+							
COF <sub>2</sub>	13.03	147 <i>148</i>	617 <i>620</i>	-153 -152	-640 -637	77PED/RYL	353-50-4
		140		-152			
CF <sub>2</sub> S+							
CSF <sub>2</sub>	(10.45±0.01)	(157)	(658)	-84	-350	79JOS	420-32-6
	See also: 85BIN/G	iRO.					
CF <sub>2</sub> Se +							
CSeF <sub>2</sub>	(9.6±0.2)	(154)	(646)	-67	-280	*EST	54393-39-4
	IP from 85BIN/GI	RO, 84BO	C/AYG.				
CF <sub>3</sub> +							
CF <sub>3</sub>	(≤8.9)	(95.4)	(399.0)	-110	<b>-</b> 460	86TSA	2264-21-3
-		(96.1)	(402.0)	-109	-457		
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from ap		-				
	See also: 81BER/I	3EA, 83W	AN/LER. IP e	stimated in 81L	OG/TAK.		
CF3I+						-	
CF <sub>3</sub> I	10.23	95	397	-141±5	-590±21	78KUD/KUD	2314-97-8
	See also: 81BER/I	BEA, 84B	AN/YAT.				
CF <sub>3</sub> NO +				··			<del></del>
CF <sub>3</sub> NO	(10.5±0.1)	(116)	(484)	-126	-529	*EST	334-99-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
CF <sub>4</sub> <sup>+</sup> CF <sub>4</sub>				-223.4±0.1	l −934.5±0.4 − <i>927</i>	77PED/RYL	75-73-0
	The stable region from the CF <sub>4</sub> mol the photoelectron A value of < 14.7	ecule; no ( spectrum	CF <sub>4</sub> + ions hav is at ~15.3 eV(	e is not accessil e been experim 31BIE/ASB, 84	ole by a vertical entally observe CAR/FAH, 85	d. The onset of NOV/POT).	
CF <sub>4</sub> O <sup>+</sup> CF <sub>3</sub> OF	(13.0) IP is onset of phot	(112)	(469) band.	-188	-785	69STU/WES	373-91-1
CF <sub>5</sub> N <sup>+</sup> CF <sub>3</sub> NF <sub>2</sub>	(11.9) IP from 82BUR/P	(105) AW.	(440)	−169±0.5	−708±2	77PED/RYL	335-01-3
CFe <sup>+</sup> FeC	$\Delta_{ m f} H$ (Ion) from ph	(358) otodissoci	(1499) ation onset to	give Fe <sup>+</sup> (86H	ET/FRE).		
CGe <sup>+</sup> GeC	(10.3±0.3) 0 K values.	(388)	(1622)	150	628	79HUB/HER	12334-26-8
CH <sup>+</sup> CH	10.64±0.01  See also: 83PLE/N	387.8 <i>387.0</i> IAR.	1622.4 1619.1	142.4 141.6	595.8 <i>592.5</i>	79HUB/HER	3315-37-5
CHBrCl <sub>2</sub> + CHBrCl <sub>2</sub>	10.6 IP is onset of phot	233 oelectron	974 pand (81NOV/	-12 CVI3).	<b>-</b> 49	78KUD/KUD	75-27-4
CHBrF <sub>3</sub> <sup>+</sup> CF <sub>3</sub> BrH	From proton affini relative to CO star		•				
CHBrN <sup>+</sup> BrCNH	From proton affini	231 ity of BrCl	965 N (RN 506-68-3	). PA = 178.3	kcal/mol, 746 l	J/mol.	
CHBr <sub>2</sub> + CHBr <sub>2</sub>	(7.4) Ion heat of format Cited ionization po that of neutral. Ex gave values of 8.13:	otential is o perimenta	lifference betw l determinatio	een this heat ones of this ionization	f formation and tion potential	1	<b>/</b> 14362-13-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$	$\Delta_f H(\text{Neutral})$	Neutral	CAS registry
Neutral	eV	kcal/mol kJ/mol	kcal/mol kJ/mol	reference	number
CHBr <sub>2</sub> Cl <sup>+</sup> CHClBr <sub>2</sub>	10.59±0.01 IP (77ROS/DRA)	246 1031 in good agreement with	2±2 9±8 onset of photoelectron band (	78KUD/KUD 81NOV/CVI3).	124-48-1
CHBr <sub>3</sub> + CHBr <sub>3</sub>	10.48±0.02 See also: 82VON/4	247.4 1035.0 ASB.	5.7±1.1 23.8±4.5	84BIC/MIN	75-25-2
CHCI+ CHCI	9.84 $\Delta_f H( ext{Ion})$ derived	298 1247 from hydrogen affinity o	71 297 considerations. IP is $\Delta_f H( ext{Ion})$	85LIA/KAR -∆ <sub>f</sub> H(Neutral).	2108-20-5
CHCIF <sup>+</sup> CCIFH	and non-observation	on of: (C <sub>2</sub> H <sub>5</sub> <sup>+</sup> + CHF tial determinations lead	(-25) (-105) + CHFCl <sub>2</sub> → CHFCl <sup>+</sup> + CP <sub>2</sub> Cl <sub>2</sub> → CHFCl <sup>+</sup> + C <sub>2</sub> H <sub>5</sub> Cl)(7 to a value of 205 kcal/mol, 858	7LIA/AUS).	33272-71-8
CHCIF <sub>2</sub> + CHF <sub>2</sub> CI	(12.2) See also: 81NOV/0	(166) (694) CVI3.	-115.6±0.5 -483.5±2.2	77PED/RYL	75-45-6
CHCIF <sub>3</sub> + CF <sub>3</sub> CIH		60 251 ty of CF <sub>3</sub> CI(RN 75-72-9 ve to CO standard(84LI	) (85MCM/KEB) A/LIE). PA ≈ 136 kcal/mol, 5	669 kJ/mol.	
CHCIN + CICNH	From proton affini (86MAR/TOP).	224 937 ty of CICN (RN 506-77-	4). PA = 174.8 kcal/moi, 731 l	«J/mol	
CHCl <sub>2</sub> <sup>+</sup> CHCl <sub>2</sub>	IP is difference bet An experimental d	ween heats of formation etermination of the IP g	26±1 108±4 9±0.02 eV) in CCl <sub>3</sub> H. Cited a of ion and neutral. ave a value of 8.32 eV(84AND) of 20 kcal/mol, 84 kJ/mol.	83WEI/BEN /DYK)	3474-12-2
CHCl <sub>2</sub> F <sup>+</sup> CHFCl <sub>2</sub>	(11.5) IP is onset of photo	(198) (829) pelectron band (82LEV/	-67±2 -281±8 LIA, 81NOV/CVI3).	78KUD/KUD	75-43-4
CHCl <sub>3</sub> + CHCl <sub>3</sub>	11.37±0.02	237 992	-25.0±0.5 -104.8±2	77PED/RYL	67-66-3

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
	<u> </u>						
CHCo + CHCo	$\Delta_{ extstyle f} H$ (Ion) from pl	(325) notodissocia	(1361) tion onset to	give Co <sup>+</sup> (86H)	ET/FRE).		
CHF <sup>+</sup>	(10.49) $\Delta_{ extstyle f} H( extstyle Ion)$ from hy	(268) drogen affii	(1121) nity consider	26±3 ations. IP is ∆ <sub>f</sub> F	109±12 I(Ion)-∆ <sub>f</sub> H(N	85LIA/KAR cutral)(85LIA/KAR	13453-52-6 ).
CHFN <sup>+</sup> FCNH	$\Delta_{\mathrm{f}}H$ (Ion) from co	(224) ore binding e	(934) energies of is	oelectronic neut	ral HNCO (8	4BEA/EYE).	
CHFO <sup>+</sup> HFCO	(12.37±0.02)	(195)	(817)	-90	-377	71JANAF	1493-02-3
CHF <sub>2</sub> + CHF <sub>2</sub>	(8.78) Heat of formation (74BLI/MCM, 77) between the heats	LIA/AUS);	cited ionizati	ion potential is t		83PIC/ROD	2670-13-5
CHF <sub>2</sub> O <sup>+</sup> F <sub>2</sub> COH	From proton affin	52 hity of CF <sub>2</sub> O	219 (RN 353-50	-4). PA = 160.5	kcal/mol, 671	l.5 kJ/mol.	
CHF <sub>3</sub> + CHF <sub>3</sub>	13.86 See also: 81BIE/A	154 <i>156</i> .SB, 85NOV	642 <i>649</i> 7/POT, 82BC	-166±2 -164 OC/WIT.	-695±8 -688	78KUD/KUD	75-46-7
СНF <sub>3</sub> I <sup>+</sup> СF <sub>3</sub> IН	From proton affin to CO standard (8	·				ed relative	
CHF <sub>3</sub> NO <sup>+</sup> CF <sub>3</sub> NHO	From the proton a 294. kJ/mol.	(70) Affinity of CI	(294) F <sub>3</sub> NO (RN 3	34-99-6). PA =	70. kcal/mol,		
CHF <sub>4</sub> + F <sub>3</sub> CFH	From proton affin	17 ity of CF <sub>4</sub> (1	70 RN 75-73-0).	PA = ~126 kca	ıl/mol, ~527 k.	J/mol.	
CHF <sub>4</sub> N <sup>+</sup> CHF <sub>2</sub> NF <sub>2</sub>	(11.5) IP from 82BUR/P.	(156) AW.	(655)	-109	-455	*EST	24708-53-0
CHFe <sup>+</sup> CHFe	$\Delta_{ m f} H$ (Ion) from ph	(322) otodissocial	(1349) tion onset to	give Fe <sup>+</sup> (86HI	ET/FRE).		

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ive Ion Table	e - Contin	nuea				
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	Ion) I kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
CHI <sub>3</sub> +									
CHI <sub>3</sub>	9.25±0.02	241	1010	28±5	118±21	78KUD/KUD	75-47-8		
		244	1019	30	127				
CHN+	. <del></del>		<del></del>						
HCN	13.60±0.01	346	1447	32.3	135.1	82TN270	74-90-8		
		346	1448	32.4	135.5				
	See also: 82KRE/	SCH, 81KI	M/KAT.						
HNC	(12.5±0.1)	(336)	(1407)	48±2	201±8	82PAU/HEH	6914-07-4		
<del>-</del>	IP by charge excha								
	See also: 80MCL		-	•	•	·			
CHNO+									
HNCO	11.61±0.03	243	1015	-25±3	-105±13	86SPI/PER	75-13-8		
HCNO	(10.03)	(202)	(1262)	52	218	*EST	506-85-4		
	(10.83)	(302)	(1263)	52					
CHNS+									
HNCS	9.94±0.02	260	1087	31	128	82TN270	3129-90-6		
СНО+									
HCO	8.10±0.05	197.3	825.6	10.7	44.8	77BEC/LIP	17030-74-9		
	$\Delta_f H$ (Ion) from ap See also: 76GUY/				RA2).				
сон		(230)	(963)						
	$\Delta_{\rm f}H({ m Ion})$ from correlation with oxygen 1s binding energy (85MCM/KEB2). See								
	also: 85WAG/KE	M, 83BUR	∕МОМ.						
CHOS+			<del></del>		<del></del>	<del> </del>	<del></del>		
COSH		181	757						
	From proton affin	ity of COS		(85MCM/KE	B, 85MCM/KE	B2)			
	re-evaluated relati	ive to CO s	standard (84LL	A/LIE). PA =	150.7 kcal/mo	ı, 631 kJ/mol.			
CHOSe +				<del></del>			<del></del>		
COSeH		230	962						
	From proton affin			5) (85KAR).	PA = 152. kca	l/mol,			
	637. kJ/mol.								
CHO <sub>2</sub> +					· · · · · · · · · · · · · · · · · · ·				
соон		141	589				2564-86-5		
	$\Delta_{\mathrm{f}}H$ (Ion) from ap		otential in HC	оон.					
CHP <sup>+</sup>		<del></del>	<del></del>						
НСР	(10.79±0.01)	(289)	(1208)	40±15	167±63	71JANAF	6829-52-3		
·	· · · · · · · · · · · · · · · · · · ·	·	\·/						

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_f H(Ic$	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry			
Neutral	eV	kcal/mol		kcal/mol		reference	number			
CHS+										
HCS	> (7.3)	243	1018	≤73	≤305	83BUT/BAE				
		243	1018	≤74	≤310					
	•					0-12-2) (82BUT/BAI				
	PA = 188.2 kcal/					-05-0) (85SMI/ADA	).			
	82KUT/EDW, 82		-	.(1011) 2/11(110						
CHS <sub>2</sub> +										
HSCS		229	959							
	From proton affir 688. kJ/mol. See				A = 164.4 kca	ıl/mol,				
CHTi +										
TiCH	A ==/= \ .	(289)	(1209)	40.4934 · =						
	Δ <sub>f</sub> H(Ion) from o	nset of endo	thermic reacti	on (86ELK/AF	M). 0 K valud	). <u></u>				
СНУ+										
VCH		(307)	(1283)							
	$\Delta_f H$ (Ion) from 0.86ARI/ARM). 0		of endothermi	c reaction (84A	ARI/ARM, 85	ELK/ARM,				
CH <sub>2</sub> +										
CH <sub>2</sub>	10.396±.003	331	1386	93	390	82TN270	60528-76-9			
	A 77/7 \ C	331	1386	93	<i>390</i>					
- ·	Δ <sub>f</sub> H(Ion) from a	opearance po	otential deteri	mination (83PL	E/MAIC).					
CH <sub>2</sub> Br <sup>+</sup>										
CH <sub>2</sub> Br	(7.9)	(224)	(937)	42	174	82MCM/GOL	16519-97-4			
	Heat of formation of ion from appearance potential (11.35±0.02) in CH <sub>2</sub> Br <sub>2</sub> .									
		Cited ionization potential is $\Delta_f H(\text{Ion}) - \Delta_f H(\text{Neutral})$ . An experimental value of 8.61 $\pm$ 0.01 eV has been reported for the ionization potential (84AND/DYK3).								
CH <sub>2</sub> BrCl <sup>+</sup>	10 77. 0 01	250	1004	11.0	15+0	מו זש מו זשפע	74 07 5			
CH <sub>2</sub> ClBr	10.77±0.01 IP from 77ROS/E	259 RA. 81NOV	1084 //CVI3.	11±2	45±8	78KUD/KUD	74-97-5			
			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·						
CH <sub>2</sub> Br <sub>2</sub> +										
CH <sub>2</sub> Br <sub>2</sub>	10.50±0.02	242	1013	0±1	0±4	EST	74-95-3			
	See also: 82VON/	ASB.								
CH <sub>2</sub> Cl <sup>+</sup>										
CH <sub>2</sub> CI	(8.6)	(229.2)	(959.0)	31	130	83WEI/BEN	6806-86-6			
		(229.9)	(962.1)							
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from a	-				otential is				
	difference in heat determination of					'K') which would				
	correspond to a ra		-			AND WITHOUT WOULD				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(	Ion) d kJ/mol	Δ <sub>f</sub> H(Ne- kcal/mol		Neutral reference	CAS registry
		- Keap III C		Realimon			
CH <sub>2</sub> CIF <sup>+</sup>							
CH <sub>2</sub> FCI	11.71±0.01	208	869	-62±2	-261±8	78KUD/KUD2	593-70-4
	IP from 84AND/I	YK.					
CH <sub>2</sub> Cl <sub>2</sub> +							
CH <sub>2</sub> Cl <sub>2</sub>	11.32±0.01	238	997	-22.9±0.2	-95.7±0.8	77PED/RYL	75-09-2
2 2		240	1003	-21.2	-88.8		
	See also: 82VON/	ASB, 81K	IM/KAT.				
CH <sub>2</sub> Cl <sub>4</sub> Si <sup>+</sup>	•						
Cl <sub>3</sub> SiCH <sub>2</sub> Cl	(10.7)	(116)	(486)	-130	-546	*EST	1558-25-4
0.30.01.20.	IP is onset of phot				5-10	2.01	1550-25-4
<u> </u>				,			
CH <sub>2</sub> C <sub>0</sub> +		Mana'	(10.4.5.)				
$CH_2 = Co$	$\Delta_{\it f} H({ m Ion})$ from on	(290)	(1213) Inthermia reacti	on and shoted	icconintian (01	ADM/HAT	
	81ARM/BEA2, 86			on and photod	issociation (or.	nicivi/rini.,	
CH <sub>2</sub> Cr <sup>+</sup>							
CH <sub>2</sub> =Cr		(292)	(1223)				
2	$\Delta_f H(Ion)$ from on			on (86ELK/AF	U).		
	See also: 81ARM/				·		
CH <sub>2</sub> F+			<u>-</u> -				·····
CH <sub>2</sub> F	9.05±0.01	199	833	-8±2	-33±8	82MCM/GOL	3744-29-4
-	IP from 84AND/I	)ΥΚ. Δ <sub>f</sub> Η	(Ion) evaluated	from observed	l ion-molecule	reactions (77LIA/A	US).
CH <sub>2</sub> F <sub>2</sub> +							
CH <sub>2</sub> F <sub>2</sub>	12.71	185	773	-108±2	~453±8	78KUD/KUD	75-10-5
2 2	See also: 81BIE/A						
CH <sub>2</sub> F <sub>3</sub> +			· · · · · · · · · · · · · · · · · · ·				<del></del>
F <sub>2</sub> CHFH		53	220				
1201111	From proton affin			PA = 147  kg	al/mol, 615 kJ/	mol.	
CH <sub>2</sub> F <sub>3</sub> O <sub>3</sub> S+							
$CF_3SO_3H_2$		(-85)	(-356)				
	From proton affin	ity of CF <sub>3</sub>	SO <sub>3</sub> H (RN 149	3-13-6). PA =	(169) kcal/mol	, (707) kJ/mol.	
CH <sub>2</sub> Fe <sup>+</sup>							
$CH_2 = Fe$		(292)	(1222)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from ph	otodissoc	iation onset to g	give Fe + (86H)	ET/FRE). See	also: 81ARM/HAL	, 84JAC/JAC.
CH <sub>2</sub> I <sub>2</sub> +	·	. <del></del>					
CH <sub>2</sub> I <sub>2</sub> CH <sub>2</sub> I <sub>2</sub>	9.46±0.02	246	1031	28±5	118±21	78KUD/KUD	75-11-6
2-2		249	1040	30	127		2
~H_Mn+							
CH <sub>2</sub> Mn + CH <sub>2</sub> =Mn		(237)	(992)				65127-77-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potentia	l ∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
Neutrai		Kcal/IIIOI	KJ/IIIOI	Keal/IIIOI	KJ/IIOI	Telefence	number
CH <sub>2</sub> N <sup>+</sup>							
HCNH	From proton af	226	947 (DN 74 00 9)	/DA 171 Iron	1/mal 717 leYe	/mal)	
	and HNC (RN 6	-		-		mory	
	4.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
CNH <sub>2</sub>		(265)	(1109)				
	$\Delta_{f}H(Ion)$ from	appearance po	otential deterr	ninations (84B	UR/HOL).		
CH <sub>2</sub> NO +							
H <sub>2</sub> NCO		167	700				
_	From proton aff	inity of HNC	O (RN 75-13-8	B) (PA = 173 k	cal/mol, 725 k	J/mol).	
CH <sub>2</sub> N <sub>2</sub> +							
CH <sub>2</sub> N <sub>2</sub>	8.999±0.001	263	1098	55±4	230±17	78VOG/WIL	334-88-3
22.2	<b>3</b> 0000 <b>3</b> 000 <b></b>						
H <sub>2</sub> NCN	(10.4)	(272)	(1137)	32	134	77PED/RYL	420-04-2
	IP is onset of ph	otoelectron b	and.				
A1-							
	(10.3)	(301)	(1259)	63.3±2.7	264.8±11	72LAU/OKA	157-22-2
N							
		· · · · · · · · · · · · · · · · · · ·	<del></del>				
CH <sub>2</sub> N <sub>4</sub> +							
N	(10.95)	(333)	(1392)	80±1	335±4	77PED/RYL	288-94-8
N	` ,	` ,	` ,			·	
N_N	IP is onset of pho	otoelectron b	and (82LEV/I	JA, 81PAL/SI	M).		
н							
CH <sub>2</sub> Ni <sup>+</sup> CH <sub>2</sub> =Ni		(285)	(1193)				60187-22-6
CII <sub>2</sub> -IVI	$\Delta_{\rm f} H({ m Ion})$ from ${ m c}$			on (81ARM/H	AL). 0 K valu	es.	00187-22-0
СН <sub>2</sub> О+							
CH <sub>2</sub> O	10.874±0.002	224.8	940.5		-108.7±0.7	77PED/RYL	50-00-0
	See also: 81BOM	<u>225.8</u> MDAN 76GI	<u>944.5</u> IY/CHIL 80V	<i>–25.0</i> ON/BIE 84W.	<i>–104.7</i> AN/CAP 81K	IM/KAT.	
	550 4350, 015014	.,, , , , , , , , , , , , , , , ,	, -, -, -, -, -, -, -, -, -, -, -, -,	11 DILL, UT 11 I	, 0. 11 , 0111		
нсон		230	962				
	$\Delta_{f}H(Ion)$ from a	ppearance po	tential measu	rement (83BU)	R/MOM).		
CH <sub>2</sub> O <sub>2</sub> +				<u> </u>			
нсоон	11.33±0.01	170.7	714.3	-90.5±0.1	-378.8±0.5	78CHA/ZWO	64-18-6
	See also: 80VON						
O/OTT		100	700				<b>71047.00.0</b>
C(OH) <sub>2</sub>	Α 77/7\ 6 · · -	175	732	ingtion- (01D)	ID (II O O O	III MOM	71946-83-3
	Δ <sub>f</sub> H(Ion) from a	ppearance po	ichtiai detern	manons (82B)			

Table 1. Positive Ion Table - Continued

ION	Ionization antoni	A **/*		A 770-		N-	·		
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
CH <sub>2</sub> S+		<del></del>							
CH <sub>2</sub> S	9.34±0.01	240	1006	25	105	82ROY/MCM	865-36-1		
	See also: 83ERM	1/AKO, 82KU	JT/EDW.						
HCSH		(270)	(1130)						
	$\Delta_{\mathbf{f}}H$ (Ion) from a	• •	• •	ination (82KU	JT/EDW). 0 I	C values.			
CH <sub>2</sub> Se <sup>+</sup>									
CH <sub>2</sub> Se	(8.95)	(245)	(1024)	38	160	*EST	6596-50-5		
-	IP from 84BOC/	AYG.	•						
CH <sub>2</sub> Ti <sup>+</sup>		<del></del>	<del></del>						
$CH_2 = Ti$		(277)	(1158)						
	$\Delta_{\rm f}$ H(Ion) from onset of endothermic reaction (86ELK/ARM).								
	0 K value.								
CH <sub>2</sub> V <sup>+</sup>									
$CH_2 = V$		(295)	(1234)						
	$\Delta_f H$ (Ion) from onset energy of endothermic reaction (84ARI/ARM, 85ELK/ARM, 86ARI/ARM). 0 K value.								
	(84ARI/ARM, 8	5ELK/ARM,	86ARI/ARM).	0 K value.	·				
CH <sub>3</sub> +									
CH <sub>3</sub>	9.84±0.01	261.3±0.4		34.8±0.3	145.8±1	81HEN/KNO	2229-07-4		
	A 77/7 - \ 6 -	<u>262</u>	<u>1098</u>	35.6	149.0	. 000170410			
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from a	ppearance po	otential determ	inations (811)	RA/MCL). Se	ee also: 83PLE/MAR	<b>.</b>		
CH <sub>3</sub> BBr <sub>2</sub> +									
CH <sub>3</sub> BBr₂	10.60	197	824	-48	~199	82HOL/SMI	17933-16-3		
CH <sub>3</sub> BCl <sub>2</sub> +				· · · · · · · · · · · · · · · · · · ·					
CH <sub>3</sub> BCl <sub>2</sub>	(11.51)	(185)	(774)	<b>-</b> 81	-337	82HOL/SMI	7318-78-7		
ru.pr.+					··		·		
CH <sub>3</sub> BF <sub>2</sub> + CH <sub>3</sub> BF <sub>2</sub>	(12.54±0.03)	(90)	(377)	-199	-833	82HOL/SMI	373-64-8		
	(123420.03)				-000		373-04-6		
CH <sub>3</sub> BO <sup>+</sup>									
BH <sub>3</sub> CO	11.14±0.02	230	964	-27	-111	82TN270	13205-44-2		
		232	970	-25.0	-104.8				
CH <sub>3</sub> Br <sup>+</sup>									
CH <sub>3</sub> Br	10.541±0.003	234	979	-9.1±0.3	-38.1±1.3	84BIC/MIN	74-83-9		
	Charles to target	238	994	-5.5	-23.0	10 057 -X/ ID- C			
						res 10.857 eV. IPs fro ID/DYK3,81KIM/K/			
CH Dati		(227)	(000)						
СН <sub>2</sub> ВгН		(237) ppearance po	(990) otential determi	nation (83HC	L/LOS2).				
	$\Delta_{ extsf{f}}H$ (Ion) from a			nation (83HC	)L/LOS2).				
CH <sub>2</sub> BrH CH <sub>3</sub> BrHg <sup>+</sup> CH <sub>3</sub> HgBr				nation (83HC	DL/LOS2). 18±3	77PED/RYL	506-83-2		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$	on)	$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry		
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number		
CH <sub>3</sub> Cd <sup>+</sup>							······································		
CH <sub>3</sub> Cd		(213)	(891)						
	From appearance	potential (9	9.69 eV) in (C	$H_3)_2$ Cd.					
CH <sub>3</sub> CI <sup>+</sup>									
CH <sub>3</sub> Cl	11.22±0.01	239	1000	-19.6±0.1	-82.0±0.5	79KUD/KUD	74-87-3		
		241	1009	-17.5	-73.4				
	See also: 81KIM/I	KAT, 77KA	R/JAD.						
CH <sub>2</sub> CIH		(246)	(1029)						
2	$\Delta_{\mathrm{f}}H$ (Ion) from ap	$\Delta_{f}H(Ion)$ from appearance potential determination (83HOL/LOS2).							
CH <sub>3</sub> ClHg <sup>+</sup>				·	<del></del>				
CH <sub>3</sub> H <sub>g</sub> Cl	(10.5)	(230)	(962)	-12±0.7	<b>-</b> 51±3	77PED/RYL	115-09-3		
J -	IP is onset of pho					V 1- 1			
CH <sub>3</sub> CIO <sup>+</sup>									
CH <sub>3</sub> OCI	(10.39±0.02)	(226)	(944)	-14	-58	*EST	593-78-2		
3	IP from 81COL/F	• •							
CH <sub>3</sub> ClO <sub>2</sub> S <sup>+</sup>	<del></del>					<del></del>			
CH <sub>3</sub> SO <sub>2</sub> CI	11.3	(173)	(722)	-88	-368	*EST	124-63-0		
32	IP is onset of photo	•							
CH <sub>3</sub> Cl <sub>2</sub> N <sup>+</sup>									
CH <sub>3</sub> NCl <sub>2</sub>	9.52	(264)	(1104)	44	185	*EST	7651-91-4		
CH <sub>3</sub> Cl <sub>2</sub> OP +	10.01	110	407	122.4	556.35	77DED (DV)	676 07 1		
CH <sub>3</sub> POCl <sub>2</sub>	10.91 IP from 80ZVE/V	119 TL, 82LEV/	497 LIA.	−133±6	-556±25	77PED/RYL	676-97-1		
<u> </u>									
CH <sub>3</sub> Cl <sub>2</sub> P <sup>+</sup>	<i>1</i> 1	4							
CH <sub>3</sub> PCl <sub>2</sub>	(9.5)	(168)	(703)	<b>-</b> 51	-214	*EST	676-83- <i>5</i>		
	IP is onset of phot	ociectron ba	ing.						
CH <sub>3</sub> Cl <sub>3</sub> Si <sup>+</sup>									
CH <sub>3</sub> SiCl <sub>3</sub>	(11.36±0.03)	(131)	(547)	-131	-549	81BEL/PER	75-79-6		
CH <sub>3</sub> Co <sup>+</sup>				······································	<del></del>				
CH <sub>3</sub> Co	(7.0±0.3)	(257)	(1075)	(96)	(400)	81ARM/BEA	76826-90-9		
ŭ	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from on	set of endot	hermic reacti	on (81ARM/H	AL). IP from 8	B1ARM/BEA. 0 K va	ilues.		
CH <sub>3</sub> Cr <sup>+</sup>		<del></del>				· · · · · · · · · · · · · · · · · · ·			
CH <sub>3</sub> Cr	(7.2)	(257)	(1074)	90	375	86ELK/ARI			
3	$\Delta_{\rm f}H({ m Ion})$ from on								
	See also: 81ARM/								
CH <sub>3</sub> F <sup>+</sup>									
CH <sub>3</sub> F	12.47±0.02	228	956	-59	-247	85LIA/KAR	593-53-3		
· "J"	See also: 81BIE/A								

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{f}H(Ion)$	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol kJ/mol	kcal/mol		reference	number
CH <sub>3</sub> F <sup>+</sup>				······		
CH <sub>2</sub> FH		217 908				
	$\Delta_{\mathbf{f}}H(\operatorname{Ion})$ from a	ppearance potential det	ermination (83H)	OL/LOS2).		
СH <sub>3</sub> F <sub>2</sub> +						
FCH <sub>2</sub> FH		110 462				
	From proton affi	inity of CH <sub>2</sub> F <sub>2</sub> (RN 75-1	0-5). PA = 147 l	ccal/mol, 615 k	J/mol.	
CH <sub>3</sub> F <sub>2</sub> P <sup>+</sup>				·		
CH <sub>3</sub> PF <sub>2</sub>	(9.8)	(68) (285)	-158	-661	*EST	753-59-3
		otoelectron band.				
CH <sub>3</sub> F <sub>2</sub> Si <sup>+</sup>			· · · · · · · · · · · · · · · · · · ·			
CH <sub>3</sub> SiF <sub>2</sub>		23 95				
32	From appearance	e potential (11.70±0.03)	of ion in (CH <sub>3</sub> ) <sub>2</sub> S	SiF <sub>2</sub> .		
CH-F-C:+						
CH <sub>3</sub> F <sub>3</sub> Si <sup>+</sup> CH <sub>3</sub> SiF <sub>3</sub>	12.48±0.04	-8 -33	-296	-1237	71JANAF	373-74-0
			<del>-</del>			
CH <sub>3</sub> Fe <sup>+</sup>	(0.4)					
CH <sub>3</sub> Fe	(8.1)	(257) (1075)	71	298	86ELK/ARI	
	-	onset of endothermic rea 4JAC/JAC. IP is $\Delta_{\mathrm{f}}H$ (Io				
			,1	<u> </u>		
CH <sub>3</sub> Hg <sup>+</sup>						
CH <sub>3</sub> Hg		221 926 225 942				
	From appearance	e potential (10.10±0.02 e	V) in (CH <sub>3</sub> ) <sub>2</sub> Hg.			
						·
CH <sub>3</sub> HgI <sup>+</sup>	(0.0)	(010)	ď 0. 0.4	00 4 4 0	ampo man	140.000
CH <sub>3</sub> HgI	(9.0) IP is onset of pho	(213) (891)	5.3±0.4	22.4±1.9	77PED/RYL	143-36-2
	——————————————————————————————————————					
СН <sub>3</sub> I <sup>+</sup>						
CH <sub>3</sub> I	9.538	223.6 935.7	3.7±0.2	15.4±0.9	77PED/RYL	74-88-4
	See: 78LIA/AUS	<i>226 945</i> 5, 83POW, 81KIM/KAT,	6 77KAR/JAD.	25		
		, ;				
CH <sub>3</sub> Mn <sup>+</sup>						
CH <sub>3</sub> Mn	Λ - LI/Iam\ fma	(223) (934) enset of endothermic rea	otion (QEADAA)	See gless Q1 A I	RM/HAI O V volue	c
	Δfu(10u) itom o	miser of endothermic lea	CHOII (OUARGVI).		WITHE. U K value	· · · · · · · · · · · · · · · · · · ·
CH <sub>3</sub> Mn <sub>2</sub> +						
CH <sub>3</sub> Mn <sub>2</sub>		(261) (1090)				
	$\Delta_{\mathbf{f}}H(Ion)$ from o	nset of endothermic rea	ction (86ARM). (	K values.		
CH <sub>3</sub> N+						
CILITA	(9.9)	(260) (1090)	32	135	78DEF/HEH	2053-29-4
CH <sub>2</sub> =NH	( · · · )					
		otoelectron band (82SCF	I/SCH, 86WER).			
		otoelectron band (82SCF	I/SCH, 86WER).			35430-17-2

Table 1. Positive Ion Table - Continued

			e ion table				
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
CH <sub>3</sub> NO <sup>+</sup> HCONH <sub>2</sub>	10.16±0.06 See also: 81KIM/I	190 KAT, 81ASI	794 B/SVE, 81HEN/	-44 ISA.	-186	69BEN/CRU	75-12-7
CH <sub>2</sub> =NOH	10.11 IP is onset of pho	(240) toelectron b	(1004) and (82FRO/LA	7 AU, 84DOG/	29 POU).	*EST	75-17-2
CH <sub>3</sub> NO	9.3 IP is onset of pho-	231 toelectron b	967 and (82CHO/FI	17±0.7 RO, 82FRO/	70±3 LAU).	73BAT/MIL	865-40-7
CH <sub>3</sub> NO <sub>2</sub> + CH <sub>3</sub> NO <sub>2</sub>	11.02±0.04 See also: 83GIL/F	236 HSI, 83OGD	987 //SHA, 81ALL/I		-74.8±1.0 /SVE, 81KIM/KA	77PED/RYL AT.	75-52-5
CH <sub>3</sub> ONO	10.38±0.03 IP from 83GIL/H	223 SI, 83GIL/H	935 ISI2, 80MEI/HS		-66.5±0.9 HA.	74BAT/CHR	624-91-9
CH <sub>3</sub> NO <sub>3</sub> + CH <sub>3</sub> ONO <sub>2</sub>	(11.53±0.01)	(237)	(990)	-29±1	-122±4	77PED/RYL	598-58-3
CH <sub>3</sub> NS <sup>+</sup> HCSNH <sub>2</sub>	8.69 See also: 81HEN/	(210) ISA.	(877)	9	39	*EST	115-08-2
CH <sub>3</sub> N <sub>2</sub> + CH <sub>3</sub> N <sub>2</sub>	From appearance (RN 334-88-3)(PA			_	$^{ extsf{N}_2}$		
H <sub>2</sub> NCNH	From core binding PA of H <sub>2</sub> NCN =			•	v/EYE).		
CH <sub>3</sub> N <sub>3</sub> + CH <sub>3</sub> N <sub>3</sub>	9.81±0.02 See also: 81BOC/I	293 DAM.	1227	67	280	69BEN/CRU	624-90-8
CH <sub>3</sub> Ni <sup>+</sup> CH <sub>3</sub> Ni	$\Delta_{\mathbf{f}}H$ (Ion) from on	(265) set of endot	(1109) hermic reaction	(81ARM/H	AL, 86ELK/ARI)	). 0 K values.	63583-16-4
С <b>H</b> <sub>3</sub> O <sup>+</sup> СН <sub>2</sub> ОН	7.56±0.01 Δ <sub>f</sub> H(Ion) from pro Δ <sub>f</sub> H(Ion) from ap (82MAC, 83HOL/	pearance po	tential measure	e. PA = 171 ments is 169	kcal/moi, 709 kJ/s		17691-31-5
сн <sub>3</sub> о	(8.6) The reaction: HCC (77HIR/KEB). A v <sup>3</sup> CH <sub>3</sub> O <sup>+</sup> (84BUF	alue of 247	kcal/mol, 1034 k	J/mol, has be	een reported for		2143-68-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
СН <sub>3</sub> О <sub>2</sub> + нс(он) <sub>2</sub>		96 403 ity of HCOOH (RN 64-1 4HOL/LOS). PA = 178.				
Сн <sub>2</sub> 00н	$\Delta_{ m f} H$ (Ion) from 87	(185) (774) FER/RON.				
CH <sub>3</sub> O <sub>3</sub> + C(OH) <sub>3</sub>	. $\Delta_{ m f} H$ (Ion) from ap	37 155 pearance potential deter	ninations(82H0	OL/LOS2).		
СН <sub>3</sub> S <sup>+</sup> Сн <sub>2</sub> SH		206 862 208 870 of ion from appearance LEV/LIA). See also: 83E				20879-50-9
СН <sub>3</sub> S	stable triplet; ab ir	(215) (901) fon results (79DIL/MCL) uitio calculations predict in that of CH <sub>2</sub> SH <sup>+</sup> , in ag en here.	ts heat of form	ation to be		7175-75-9
CH <sub>3</sub> S <sub>2</sub> <sup>+</sup> CH <sub>3</sub> SS	(8.0) ∆ <sub>f</sub> H(Ion) from ap IP is ∆ <sub>f</sub> H(Ion) - ∆	200 835 201 839 pearance potential detern	16 nination (83BL	69 7T/BAE).	86HAW/GRI	
CH <sub>3</sub> Sc <sup>+</sup> CH <sub>3</sub> Sc	• • •	(212) (887) set of endothermic reacti ARI. IP is $\Delta_{\rm f} H$ (Ion) - $\Delta_{\rm f} F$	-	•	86SUN/ARI	
CH <sub>3</sub> Se <sup>+</sup> CH <sub>2</sub> SeH	From proton affin 774 kJ/mol.	219 916 ity of CH <sub>2</sub> Se (RN 6596-5	0-5)(85KAR). I	PA = 185 kcal/i	mol,	
СН <sub>3</sub> Ті <sup>†</sup> СН <sub>3</sub> Ті	-	(248) (1039) set of endothermic reacti <sub>f</sub> H(Neutral). 0 K values.	<i>(102)</i> on (86ELK/AR	<i>(426)</i> M).	86ELK/ARI	
СН <sub>3</sub> V <sup>+</sup> СН <sub>3</sub> V	•	(263) (1102) set energy of endothermi ELK/ARM, 86ARI/ARM		463 n) - Δ <sub>f</sub> H(Neutra	86ARI/ARM	•

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
		- KCAI/IIIOI		- Keat/IIIO			
CH <sub>3</sub> Xe <sup>+</sup>							
CH <sub>3</sub> Xe		(210)	(877)				
	$\Delta_{\mathbf{f}}H(\text{Ion})$ derive	d from result	s of 86HOV/	MCM.			
CH <sub>3</sub> Zn <sup>+</sup>							
CH <sub>3</sub> Zn	(7.2)	(213)	(890)	(47)	(197)		
-	From appearance	potential (1	0.22±0.02 eV	) in (CH <sub>3</sub> ) <sub>2</sub> Zn.			
	Value from onse			(86GEO/ARM	) is in agreem	ent.	
	IP is $\Delta_{\mathbf{f}}H(\text{Ion})$ -	$\Delta_{\mathbf{f}}H(\text{Neutral})$	). 0 K values.				
СH <sub>4</sub> +							
CH <sub>4</sub>	12.51	271	1132	-17.8±0.1	-74.5±0.4	77PED/RYL	74-82-8
7		272	1140	-16.0	-66.8		
	See also: 83PLE/	MAR, 81KIN	//KAT, 84CF	IA/HIL.			
CH <sub>4</sub> Br <sup>+</sup>				<del></del>		·	
CH <sub>3</sub> BrH		191	800				
3	From proton affi			9). PA = 165.7	kcal/mol, 693	kJ/mol.	
	-	- J		<u> </u>			<del> </del>
CH <sub>4</sub> Cl <sup>+</sup>							
CH <sub>3</sub> CIH		183	767				
	From proton affir	nity of CH <sub>3</sub> C	I (RN 74-87-	3). PA = ~163	kcal/mol, ~68	2 kJ/mol.	
CH <sub>4</sub> CIN+							
CH <sub>3</sub> NHCI	(9.19±0.02)	(230)	(964)	18	77	*EST	6154-14-9
or a at	· · · · · · · · · · · · · · · · · · ·		·				
CH <sub>4</sub> Cl <sub>2</sub> Si <sup>+</sup>	(11.47)	(1(0)	(705)	06.0	400 - 0	OIDEL DED	20157 50 7
CH <sub>3</sub> SiHCl <sub>2</sub>	(11.47)	(168)	(705)	-96±2	-402±8	81BEL/PER	20156-50-7
CH <sub>4</sub> F <sup>+</sup>							
CH <sub>3</sub> FH		(162)	(678)				
•	From proton affin	nity of CH <sub>3</sub> F	(RN 593-53-	3). PA = 145 kg	cal/mol, 605 k.	J/mol	
	(86MCM/KEB, 8	5MCM/KEB	3).				
СH <sub>4</sub> I +			····	<del></del>		<del></del>	
СП41 СН <sub>3</sub> ІН		(198)	(830)				
3	From proton affin		` '	PA = ~171 k	cal/mol, ~715	kJ/mol.	
	-			<u></u>			
CH <sub>4</sub> N <sup>+</sup>		44 500	(m , r)	•• •	400.0		4.000
CH <sub>2</sub> NH <sub>2</sub>	6.1	(178)	(745)	38±2	159±8	81GRI/LOS	54088-53-8
	Δ <sub>f</sub> H(Ion) from a <sub>l</sub>			-	-		
	See also: 81GRI/I	JUS, 84LUS/	1101, 02IVIA	C, OSPUIVCA	) <b>.</b>		
CH <sub>3</sub> NH	(6.7)	(199)	(833)	43.6±3.0	182.4±12.5	78SEN/FRA	49784-84-1
3	$\Delta_{f}H(Ion)$ from a						
	$\Delta_{\mathbf{f}}H(\mathrm{Ion}) - \Delta_{\mathbf{f}}H(\mathrm{Ion})$	-		•	•		
CIT NO+							
CH <sub>4</sub> NO <sup>+</sup>		122	514				
HC(OH)NH <sub>2</sub>	From aroton offi-	123 sity of HCON	514 JH- (RN 75-1	2.7) PA - 10	R 4 kcal/mol G	30 kT/mol	
	From proton affir	my or FICOR	ATTS (TOTA 12-1	.4-1). FA = 19	o.4 kcai/mol, d	DOU KA/IIIUI.	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	∆ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	-	kJ/mol	kcal/mol		reference	number
CH <sub>4</sub> NO <sub>2</sub> +			· · · · · · · · · · · · · · · · · · ·				
CH <sub>3</sub> NOOH		169	705				
	From proton affin	ity of CH <sub>3</sub>	NO <sub>2</sub> (RN 75-5	2-5). PA = 17	9.2 kcal/mol, 7	50 kJ/mol.	
CH <sub>3</sub> ONHO		157	658				
_	From proton affin	ity of CH <sub>3</sub>	ONO (RN 624	-91-9). PA = 1	192.5 kcal/mol,	805 kJ/mol.	
CH <sub>4</sub> N <sub>2</sub> +					· · · · · · · · · · · · · · · · · · ·		
(E)-CH <sub>3</sub> N=NH	8.8±0.1	(248)	(1037)	45±2	188±8	*EST	26981-93-1
CH <sub>4</sub> N <sub>2</sub> O <sup>+</sup>							
(NH <sub>2</sub> ) <sub>2</sub> CO	9.7	165	690	-58.8±0.5	-245.9±2.1	77PED/RYL	57-13-6
	See also: 82BIE/A	SB.					
CH <sub>4</sub> N <sub>2</sub> S <sup>+</sup>						······································	
(NH <sub>2</sub> ) <sub>2</sub> CS	7.9	188	785	5±0.5	23±2	82TOR/SAB	62-56-6
CH <sub>4</sub> O+							**************************************
СН3ОН	10.85±0.01	202.0	845.3	-48.2±0.1	-201.6±0.2	77PED/RYL	67-56-1
-		204.6	<i>856.2</i>	-45.6	-190.7		
	See also: 82MIS/P	OK, 80VO	N/BIE, 82ALI	√MIG, 84BOW	//MAC, 81KIN	I/KAT, 80BAC/MO	OU, 77KAR/JAI
СН <sub>2</sub> ОН <sub>2</sub>		195±2	815±8				25765-84-8
	$\Delta_{\mathbf{f}}H$ (Ion) from ap	pearance p	otential measu	rements (82H)	OL/LOS).		
CH <sub>4</sub> S+							
CH <sub>3</sub> SH	9.44±0.005	212.3	888.2	-5.5±0.1	-22.9±0.6	77PED/RYL	74-93-1
		214.8	899.0	-2.9	-12.1		
	IP from 83BUT/B	AE, 81KIN	1/KAT, 82KU	rædw.			
CH <sub>2</sub> SH <sub>2</sub>		219	916				63933-47-1
2 2		221	925				
	$\Delta_{\mathbf{f}}H$ (Ion) from ap	pearance p	otential deter	nination (83HC	DL/LOS2).		
CH <sub>4</sub> S <sub>2</sub> +				<u></u>		· · · · · · · · · · · · · · · · · · ·	
CH <sub>2</sub> (SH) <sub>2</sub>	(9.42)	(225)	(942)	8±2	33±8	78BEN	6725-64-0
CH <sub>4</sub> Sc <sup>+</sup>				·	<del></del>		
CH <sub>3</sub> ScH		(214)	(895)				
·	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from on	set of endo	othermic reacti	on (84TOL/BE	A). See also:	86ELK/ARI.	
CH <sub>5</sub> +					· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
CH <sub>5</sub>		216	905				
	From proton affin PA = 131.6 kcal/n	•		See also: 85MC	CM/KEB.		
CH <sub>5</sub> As <sup>+</sup>							
CH <sub>3</sub> AsH <sub>2</sub>	(8.5)	(207)	(868)	11	48	*EST	593-52-2
3. m.12	IP is onset of phot				,,,	~~·	57.7.02-4

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	al Δ <sub>f</sub> H(Io	on)	$\Delta_f H(N_0)$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol		-	kJ/mol	reference	number
CH <sub>5</sub> N <sup>+</sup>							
CH <sub>2</sub> NH <sub>3</sub>		(≤201)	(≤841)				
	The reaction c-				. 001101 // 00	70 mana	
	is at least 15 kca	al/moi exotner	mic (84LIA/I	BUC). See also	: 83HOL/LOS	52, 72GRO.	
CH <sub>3</sub> NH <sub>2</sub>	8.97±0.02 See also: 81KIN	201	842 7/ASD 92DT 1	-5.5±0.1	-23.0±0.4	77PED/RYL	74-89-5
	See also, STAIN		2/AGD, 62LLL		<del></del>		<del></del>
CH <sub>5</sub> NO <sup>+</sup>		44.43	(00 m)				
CH <sub>3</sub> ONH <sub>2</sub>	9.55	(214)	(895)	-6±2	-26±8	69BEN/CRU	67-62-9
	IP from 83MOI	JPIK. See also	0: 81KIM/KA	11.			
CH <sub>3</sub> NHOH	(9.0)	(196)	(818)	-12±2	-50±8	69BEN/CRU	593-77-1
	IP is onset of pl	otoelectron b	and.				
CH <sub>5</sub> N <sub>3</sub> +							
$(NH_2)_2C = NH$	(9.10±0.05)	(218)	(910)	8	32	82JOS	113-00-8
СH <sub>5</sub> O <sup>+</sup>							
CH <sub>3</sub> OH <sub>2</sub>		136	567				
	From proton af	finity of CH <sub>3</sub> C	OH (RN 67-56	5-1). PA = 181	.9 kcal/mol, 76	i1 kJ/mol.	· · · · · · · · · · · · · · · · · · ·
CH <sub>5</sub> P <sup>+</sup>							
CH <sub>3</sub> PH <sub>2</sub>	9.12±0.07	(206) Maran esta	(862)	-4	-18	*EST	593-54-4
	See also: 82CO	W/REIVI, 6ZEI					
CH <sub>5</sub> S +							
CH <sub>3</sub> SH <sub>2</sub>	From proton aff	173 finity of CH <sub>3</sub> S	723 H (RN 74-93	-1). PA = 187.	4 kcal/mol, 784	4 kJ/mol.	
CH N+							·····
CH <sub>6</sub> N <sup>+</sup> CH <sub>3</sub> NH <sub>3</sub>	(4.3±0.1)	(146)	(611)				
3:3	•			(RN 74-89-5).	PA = 214.1 kg	cal/mol, 896 kJ/mol.	
	IP estimated fro	m neutralized	ion-beam sp	ectroscopy data	(85JEO/RAK	<b>S</b> ).	
CH <sub>6</sub> N <sub>2</sub> +							
CH <sub>3</sub> NHNH <sub>2</sub>	7.67±0.02	199	835	22.6±0.1	94.6±0.6	77PED/RYL	60-34-4
	IP from charge t	=			ns		
	(84MAU/NEL)	is in agreeme	iii. See also: 8	TUIMANUT.	· · · · · · · · · · · · · · · · · · ·		
CH <sub>6</sub> P+		a					
CH <sub>3</sub> PH <sub>3</sub>	From proton aff	158 inity of CH <sub>2</sub> P	658 H2 (RN 593-	54-4). PA = 20	4.1 kcal/mol. 8	354 kJ/mol.	
		, <u>3</u> -	2.			····	
CH <sub>6</sub> Si <sup>+</sup>	10.7	240	1002	7.4	20.4	OCD CHATLA	002.04.0
CH <sub>3</sub> SiH <sub>3</sub>	10.7	240	1003	-7±1	-29±4 	86DON/WAL	992-94-9
CH <sub>7</sub> N <sub>2</sub> +							
CH <sub>3</sub> NH <sub>2</sub> NH <sub>2</sub>		(174)	(729)				
	From proton aff	inity of CH <sub>3</sub> N	HNH <sub>2</sub> (RN 6	50-34-4). PA =	(214.1) kcal/n	nol,	
	(896) kJ/mol.						

Table 1. Positive Ion Table - Continued

	Audic.		e ion rable	Contint			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		∆ <sub>f</sub> H(New kcal/mol		Neutral reference	CAS registry number
CH <sub>8</sub> BN <sup>+</sup>	(0.44.0.01)	(010)	(070)	12.1	-54±4	80TEL/RAB	1722-33-4
CH <sub>3</sub> NH <sub>2</sub> BH <sub>3</sub>	(9.66±0.01)	(210)	(878)	-13±1	-J4I4		1722-33-1
CIN+							
ICN	10.87±0.02	305	1274	53.9	225.5	82TN270	506-78-5
		305	1275	54.0	226.1		
CI <sub>4</sub> +							
CI <sub>4</sub>	8.95	142	596	<b>-64</b>	-268	78KUD/KUD	507-25-5
	· IP is onset of pho	toelectron b	and (82JON/DI	EL).			
CIr <sup>+</sup>							
IrC	(9.5±1)	(400)	(1670)	180	753	79HUB/HER	12385-37-4
	0 K values.						
CKN+							
KCN	(9.3±0.3)	(236)	(988)	22	91	82TN270	151-50-8
	, ,	(236)	(987)	21	90		
CN+			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
CN CN	(14.09)	(428.9)	(1794.6)	104.0±2	435.1±10	85JANAF	57-12-5
	(14.05)	(429.3)	(1796.3)	104.4±2	436.8±10		
	$\Delta_{\mathbf{f}}H(Ion)$ from a	ppearance p	otential measur	ements. IP ci	ted is $\Delta_{\mathbf{f}}H(\mathrm{Ion})$	$\Delta_{\mathbf{f}}H$ (Neutral).	
CNO+							
NCO	(11.76±0.01)	(308)	(1289)	37±3	154±14	700KA	
	IP from 83DYK/	ION.					
CN <sub>2</sub> O <sup>+</sup>				<del></del>			
ONCN	10.93	300.9	1259.0	48.85±0.0	3 204.4±0.1	84NAD/REI	4343-68-4
	IP from 81JON/N	MOO. See a	lso: 81KIM/KA7	3.			
CN <sub>4</sub> +				1			
N≡CN <sub>3</sub>	(≤10.98±0.02)	(≤361)	(≤1512)	108±5	453±20	690KA/MEL	764-05-6
co+	14.0120	206 74	1241 50	-26.42	-110.53	82TN270	630-08-0
СО	14.0139	<u>296.74</u> 295.97	<u>1241.59</u> <u>1238.32</u>	-20.42 -27.20	-110.55 -113.80	021.470	
	See also: 81KIM			_ : .= -	•		
cos+	11 1507 . 0 0015	224	936	-34	-142	77PED/RYL	463-58-1
cos	11.1736±0.0015	224 <i>224</i>	936 936	-34 -34	-142 -142		
	Cited ionization	potential co	rresponds to for	mation of CO	OS <sup>+</sup> ( <sup>2</sup> Π <sub>3/2</sub> ). For	rmation	
	of $\cos^{+}(^{2}\pi_{1/2})$	requires 11	.2204±0.0015 eV	. IP from 810	ONO/OSŪ,80DI	EL/HUB.	
COSe <sup>+</sup>							
COSe	10.36±0.01	(222)	(928)	-17	-72	*EST	1603-84-5
		` · · · ·					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
CO <sub>2</sub> +							
co <sub>2</sub>	13.773±0.002	223.6	935.4	-94.05	-393.51	82TN270	124-38-9
	0 1 04777.4	223.7	935.7	<i>-93.96</i>	<i>-393.14</i>		
	See also: 81KIM/	KAT.					
CP+							
СР	(10.5±0.5)	(365)	(1529)	123	516	79HUB/HER	12326-85-1
CRh +							
CRh	(8.9±0.5)	(370)	(1550)	165±1	692±4	84SHI/GIN	12127-42-3
	0 K values. See al	so: 81HAQ/	GIN.				
CS <sup>+</sup>	· · · · · · · · · · · · · · · · · · ·						
CS	11.33±0.01	327	1368	64	267		2944-05-0
		324	1356	63	262		
	Heat of formation					02 eV	
	(to give CS + + S						
	$\Delta_{\mathbf{f}}H(\text{Neutral}) =$	ΔfM(10Π) -	ir, in good ag	reement with 7	HUB/HER.		
CS <sub>2</sub> +							
CS <sub>2</sub>	10.0685±0.0020	260	1088	28±0.2	117±1	77PED/RYL	75-15-0
		260	1088	28	117		
	See also: 81KIM/I	KAT. 					
CSe <sub>2</sub> +							
CSe <sub>2</sub> + CSe <sub>2</sub>	9.258±0.0002	275	1149	61±5	256±20	82PIL/SKI	506-80-9
				· · · · · · · · · · · · · · · · · · ·			
CSi <sub>2</sub> +	(0.2+0.4)	(244)	(1440)	132	552	82TN270	12070-04-1
Si <sub>2</sub> C	(9.2±0.4)	(344) <i>(343)</i>	(1437)	131	549	02111270	12070-04-1
CV+							
CV	A 17/1 f	(360)	(1506)		DY/A D M ( 05)	DI V/ADMO OV	
	Zieri(ton) from or	iset energy t	n endothermi	e reaction (64A	M/ARW, 651	ELK/ARM). 0 K valu	
C <sub>2</sub> +							
_ c <sub>2</sub>	12.11	478	1998	198.8	831.9	79HUB/HER	12070-15-4
	TD 4 #0477 ID 7	476	1992	196.8	823.4		
	IP from 79HUB/F	iek.					
C <sub>2</sub> BrI <sup>+</sup>		-					
BrC≅CI	(9.34)	(276.56)	(1157.15)	61.18	255.98	84DEW/HEA	26395-29-9
0 n +	<del> </del>				<del></del>		<del></del>
C <sub>2</sub> Br <sub>2</sub> <sup>+</sup>	0.67	205	1102	£1 0	259.6	92DEW/41E 4	624 61 2
BrC≡CBr	9.67	285	1192	61.8	258.6	83DEW/HEA	624-61-3
C <sub>2</sub> Br <sub>2</sub> F <sub>4</sub> +				-			
(CF <sub>2</sub> Br) <sub>2</sub>	. (11.1)	(67)	(282)	-189±1	-789±4	83KOL/PAP	124-73-2
_ <del>_</del>	IP is onset of phot	oelectron ba	and.				

Table 1. Positive Ion Table - Continued

	Table	I. PUSILI	ve Ion Table	- Contin	nea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol		Δ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> Br <sub>2</sub> O <sub>2</sub> + BrCOCOBr	(10.49±0.1)	(180)	(752)	-62	-260	*EST	15219-34-8
C <sub>2</sub> Ce <sup>+</sup>	(5.6±0.5)	(265)	(1110)	136	570	82TN270	12012-32-7
		(265)	(1109)	136	569	_	
C2CIF3+							
C <sub>2</sub> F <sub>3</sub> Cl	. 9.81±0.03	(89) <i>(90)</i>	(374) <i>(377)</i>	-137±2 -136	-573±8 - <i>570</i>	77PED/RYL	79-38-9
C <sub>2</sub> CIF <sub>5</sub> +							
CF <sub>3</sub> CF <sub>2</sub> CI	(12.6) IP is onset of pho	(23) toelectron l	(98) pand.	-267±1	-1118±4	81BUC/FOR	76-15-3
C <sub>2</sub> CII+							
CIC=CI ·	(9.44)	(271.94)	(1137.79)	54.25	226.98	84DEW/HEA	25604-71-1
C <sub>2</sub> Cl <sub>2</sub> +					. <u></u>		
ClC=CCl	10.09	283	1183	50±10	209±42	71JANAF	7572-29-4
	See: 81BOC/RIE,	<i>282</i> 82MAI/TH	<i>1180</i> ło, 83KLA/M <i>i</i>	49±10 AI.	205±42		
C <sub>2</sub> Cl <sub>2</sub> F <sub>2</sub> +							
$CF_2 = CCl_2$	9.65±0.03	142	593	-81±3	-338±11	83KOL/PAP	79-35-6
CFCI = CFCI	(10.2±0.1)	(157)	(657)	<del>-</del> 78	-327	82TN270	598-88-9
C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub> +					——————————————————————————————————————		
(CF <sub>2</sub> CI) <sub>2</sub>	12.2	60	252	-221±1	-925±4	83KOL/PAP	76-14-2
C <sub>2</sub> Cl <sub>2</sub> O +							
$Cl_2C=C=O$	9.0	(191)	(799)	-16	<b>~69</b>	*EST	4591-28-0
·	IP is onset of phot	oelectron t	oand (81BOC/I	HIR, 82LEV/L	IA). 		
C <sub>2</sub> Cl <sub>2</sub> O <sub>2</sub> +							
(COCI) <sub>2</sub>	10.91±0.05 See also: 81KIM/F	173 KAT.	724	-79±1	-329±5	77PED/RYL	79-37-8
C <sub>2</sub> Cl <sub>3</sub> F <sub>3</sub> +		<del>-</del>					
CF <sub>3</sub> CCl <sub>3</sub>	11.5	92	385	-173±2	-725±10	83KOL/PAP	354-58-5
5 5	IP is onset of phot	oelectron t					
CFCl <sub>2</sub> CF <sub>2</sub> Cl	11.99±0.02	103	430	-174±0.7	-727±3	83KOL/PAP	76-13-1
C <sub>2</sub> Cl <sub>3</sub> N <sup>+</sup>							
CCI <sub>3</sub> CN	11.89 IP from 83MOL/F	(294) PIK2.	(1229)	20	82	*EST	545-06-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_{\mathrm{f}}H(\mathrm{Ion})$ $\Delta_{\mathrm{f}}I$				utmol)	Neutral	CAS registry
Neutral	eV	kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		reference	number
C <sub>2</sub> Cl <sub>4</sub> <sup>+</sup>							
C <sub>2</sub> Cl <sub>4</sub>	9.32	212	888	-3±0.5	-11±2	83KOL/PAP	127-18-4
	See also: 82VON	<i>212</i> /ASB, 81KIN	<i>889</i> M/KAT.	-2	-10		
		· · · · · · · · · · · · · · · · · · ·					
C <sub>2</sub> Cl <sub>4</sub> F <sub>2</sub> +	11.3	135	563	-126±2	-527±10	83KOL/PAP	76 12 0
CFCl <sub>2</sub> CFCl <sub>2</sub>	IP is onset of pho				-32/±10	OSKOLIFAT	76-12-0
				·			
C <sub>2</sub> Cl <sub>4</sub> O <sup>+</sup>	(11.0)	(100)	(920)	-56±2	-236±9	7702D/DVI	76-02-8
CCI3COCI	(11.0) IP is onset of pho	(198) toelectron b	(828) and (81KIM/		-230±9	77PED/RYL	70-02-6
C <sub>2</sub> Cl <sub>6</sub> <sup>+</sup>		·					
CCI <sub>3</sub> CCI <sub>3</sub>	11.1	220	921	-36±1	-150±5	83KOL/PAP	67-72-1
3 3	IP is onset of pho	toelectron b	and (81KIM/	KAT). See also	: 82LEV/LIA.		
C <sub>2</sub> F <sub>2</sub> +				······································			
FC=CF	11.18	(263)	(1100)	5±5	21±21	71JANAF	689-99-6
	See also: 81BIE/A	ASB.					
C <sub>2</sub> F <sub>2</sub> O <sub>2</sub> +							
FCOCOF	(12.20±0.02)	(107)	(449)	-174	-728	*EST	359-40-0
C <sub>2</sub> F <sub>3</sub> +	······································						
C <sub>2</sub> F <sub>3</sub>	(10.2)	(189)	(791)		-192.0±8.4	83SPY/SAU	
	From appearance			V in C <sub>2</sub> F <sub>4</sub> and	15.4±0.1 eV in (	C <sub>2</sub> F <sub>3</sub> Cl.	
-/	IP is $\Delta_f H(Ion) - \Delta_f H(Ion)$	7 <sup>t</sup> u(izentisi	). 				
$C_2F_3N^+$							
CF <sub>3</sub> CN	13.86	200 VIII. San alaa	837		-499.8±1.2	77PED/RYL	353-85-5
	IP from 81ASB/S	VE. See also	: 83MOL/PIK	· · · · · · · · · · · · · · · · · · ·			
C <sub>2</sub> F <sub>4</sub> +							
$C_2F_4$	10.12±0.02	75 75	316	-158±0.7	-659±3	83KOL/PAP	116-14-3
	See also: 81BIE/V	<i>76</i> 'ON. 81BIE/	<i>319</i> ASB.	-157	-657		
		- ,					
$C_2F_5^+$		(0)	(0)	212.4	902 - 4	001/01/00	2260 40 0
C <sub>2</sub> F <sub>5</sub>	Appearance poter	(0)	(0) ion in CaFe (	−213±1 15.46 eV). C <sub>2</sub> F <sub>4</sub>	-893±4 ·I (11.71 eV):	82MCM/GOL	3369-48-0
	C <sub>3</sub> F <sub>8</sub> (13.32 eV),						
	heat of formation	of 15 kcal/m	ol, 5 kcal/mol				
	respectively. See: 8	80ING/HAN	I.				
C <sub>2</sub> F <sub>5</sub> I + C <sub>2</sub> F <sub>5</sub> I							
C <sub>2</sub> F <sub>5</sub> I	(10.66±0.1)	(6)	(25)	-240±1	-1004±4	81BUC/FOR	354-64-3

Table 1. Positive Ion Table - Continued

	Table			e - Contin			
ION Neutral	Ionization potential $\Delta_f H(Ion)$ eV kcal/mol kJ/mol		$\Delta_{\mathbf{f}}H(Ne)$ kcal/mol		Neutral reference	CAS registry number	
C <sub>2</sub> F <sub>6</sub> +		<del>,</del>					· · · · · · · · · · · · · · · · · · ·
C <sub>2</sub> F <sub>6</sub>	(13.4)	(-12) (-10)	(-50) <i>(-41)</i>	-321 -319	-1343 - <i>1334</i>	75CHE/ROD	76-16-4
	IP is onset of pho	toelectron	band. (80ING/	HAN).			
C <sub>2</sub> F <sub>7</sub> N <sup>+</sup>				· · · · · · · · · · · · · · · · · · ·			
(CF <sub>3</sub> ) <sub>2</sub> NF	(11.6) IP from 82BUR/P	(-10) PAW.	(-44)	-278	-1163	*EST	359-62-6
C <sub>2</sub> H +						· · · · · · · · · · · · · · · · · · ·	
C <sub>2</sub> H	(11.7)	(405) <i>(404)</i>	(1693) <i>(1689)</i>	135±1 <i>134</i>	565±4 <i>560</i>	82MCM/GOL	2122-48-7
	Heat of formation $\Delta_f H(Ion) - \Delta_f H(Ion)$	of ion fro				ven is	
C <sub>2</sub> HBr <sup>+</sup>							
HC≡CBr	10.31±0.02 IP from 77ALL/K	297.0 LO. Sec al	1242.4 so: 82LEV/LIA	59.2 A.	247.7	75OKA	593-61-3
C <sub>2</sub> HBrClF <sub>3</sub> +					· · · · · · · · · · · · · · · · · · ·		
CF <sub>3</sub> CHClBr	11.0 IP is onset of photon	86 toelectron	361 band (81DUM	-167±1 /DUP).	−700±4	83KOL/PAP	151-67-7
C III o t		<del></del>		· · · · · · · · · · · · · · · · · · ·		<del></del>	
C <sub>2</sub> HBrO <sup>+</sup> CHBr=C=O	(≤9.10) IP from 81BOC/H	(≤207) IIR.	(≤868)	-2	-10	*EST	78957-22-9
C <sub>2</sub> HCl <sup>+</sup>			<del></del>	<del> </del>	<del> </del>		<del></del>
HC=CCI	10.58±0.02 IP from 77ALL/K	305 LO. See al	1276 so: 84MAI/TH	61 O.	255	70KLO/PAS	593-63-5
C <sub>2</sub> HClF <sub>2</sub> +		<del></del>		· · · · · · · · · · · · · · · · · · ·			
CF <sub>2</sub> =CHCl	9.80±0.04	150	629	-76	-316	82TN270	359-10-4
C <sub>2</sub> HCIF <sub>3</sub> O +							<del> </del>
CF <sub>3</sub> C(OH)Cl		4	14				
	From proton affin PA = 161.2 kcal/r	_		-32-5)(85MCM/	KEB, 85MCN	M/KEB2).	
C <sub>2</sub> HClO <sup>+</sup>							···
CHCI = C = O	(≤9.3) See also: 81BOC/l	(≤201) HIR.	(≤840)	-14	-57	*EST	29804-89-5
C <sub>2</sub> HCl <sub>2</sub> F <sub>3</sub> +							
CF <sub>3</sub> CHCl <sub>2</sub>	11.5 IP is onset of phot	88 toelectron	370 band (81DUM,	-177±2 /DUP).	-740±10	83KOL/PAP	306-83-2
CF <sub>2</sub> CICHFCI	≤12.00	≤104	≤434	-173±2	-724±10	83KOL/PAP	354-23-4

Table 1. Positive Ion Table - Continued

		1. 1 03.01	e ion taoi	e - Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> HCl <sub>3</sub> + C <sub>2</sub> HCl <sub>3</sub>	9.47±0.01 See also: 82VON/	214 <i>215</i> 'ASB, 81KIN	895 <i>898</i> M/KAT.	-4.5±0.7 -4	-19±3 -16	85PAP/KOL	79-01-6
C <sub>2</sub> HCl <sub>3</sub> N <sup>+</sup> CCl <sub>3</sub> CNH	From proton affin	209 aity of CCl <sub>3</sub> 0	876 CN (RN 545-0	)6-2). PA = 17	5.8 kcal/mol, 7	35.5 kJ/mol.	
С <sub>2</sub> HCl <sub>3</sub> O <sup>+</sup> ссі <sub>3</sub> сно	(10.5) IP is onset of phot	(195) toelectron b	(816) and (81KIM/	-47 KAT). See also	-197 : 85GUI/PFI2.	82TN270	75-87-6
CHCI <sub>2</sub> COCI	(11.0) IP is onset of phot	(196) toelectron b	(820) and.	-58±2	−241±9	77PED/RYL	79-36-7
C <sub>2</sub> HCl <sub>5</sub> <sup>+</sup> CHCl <sub>2</sub> CCl <sub>3</sub>	(11.0) IP is onset of phot	(220) toelectron b	(919) and (81KIM/	−34±2 KAT).	−143±7	78GUN/HEA	76-01-7
C <sub>2</sub> HF <sup>+</sup> HC≖CF	11.26 See also: 81BIE/A	285 .SB.	1193	26	107	80STA/VOG	2713-09-9
C <sub>2</sub> HF <sub>3</sub> + C <sub>2</sub> HF <sub>3</sub>	10.14 See also: 81BIE/V	117 ON, 81BIE	487 /ASB.	−117±2	-491±8	77PED/RYL	359-11-5
C <sub>2</sub> HF <sub>3</sub> N <sup>+</sup> CF <sub>3</sub> CNH	From proton affin PA = 164.3 kcal/n			5-5) (85MCM/K	EB, 85MCM/	KEB2).	
С <sub>2</sub> НF <sub>3</sub> О <sub>2</sub> <sup>+</sup> СF <sub>3</sub> СООН	11.46 See also: 81ASB/S	18 SVE.	75	-246.3±0.3	-1030.7±1	77PED/RYL	76-05-1
C <sub>2</sub> HF <sub>4</sub> O <sup>+</sup> CF <sub>3</sub> C(OH)F	From proton affin	-44 ity of CF <sub>3</sub> C	-182 OF (RN 354-	34-7). PA = 16	0.2 kcal/mol, ć	570 kJ/mol.	
C <sub>2</sub> HN <sup>+</sup> HCCN	Δ <sub>f</sub> H(Ion) from ap	(366) pearance po	<i>(1531)</i> otential deter	ninations. See a	also: 85HAR/N	ACI. 0 K values.	
C <sub>2</sub> HN <sub>2</sub> + NCCNH	Prom proton affin PA = 162 kcal/mo			5) (87DEA/MA	AU).		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> HO <sup>+</sup>							
нссо	(9.5) Heat of formation IP is $\Delta_f H(\text{Ion})$ -		-	42.4±2.1 al determinatio	177.4±8.8 on (84LOS/HOL)	*EST ).	51095-15-9
C <sub>2</sub> HV <sup>+</sup>				<del></del>	······································		<del></del>
VC <sub>2</sub> H	$\Delta_{ m f} H$ (Ion) from $c$	(303) enset energy	<i>(1268)</i> of endothermi	c reaction (84A	ARI/ARM, 85ELI	K/ARM). 0 K val	uc.
C <sub>2</sub> H <sub>2</sub> + .							
C <sub>2</sub> H <sub>2</sub>	11.400±0.002	<u>317.4</u> <u>317.5</u>	1327.9 1328.5	54.5±0.25 <i>54.7</i>	228.0±1 228.6	77PED/RYL	74-86-2
	See also: 81KIM	KAT, 82HA	Y/IWA.				
C <sub>2</sub> H <sub>2</sub> Br <sub>2</sub> + (E)-CHBr = CHBr	9.51±0.04	(245)	(1024)	25	106	*EST	590-12-5
(2)-Cribi - Cribi	An IP of 9.30±0.0				100		J/G-12-J
(Z)-BrCH = CHBr	9.63±0.01 An IP of 9.32±0.0	247 02 eV has alse	1035 o been reporte	25 d (72CHA/FR	106 O).	*EST	590-11-4
$CBr_2 = CH_2$	9.78±0.01 See also: 82VON	(247) //ASB.	(1034)	21	90	*EST	593-92-0
C <sub>2</sub> H <sub>2</sub> Br <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> BrCH <sub>2</sub> Br	10.83±0.01	147	614	-103±5	-431±20	83KOL/PAP	75-82-1
C <sub>2</sub> H <sub>2</sub> CIN <sup>+</sup>							
CH <sub>2</sub> CICN	11.95±0.01	(296)	(1239)	21	86	*EST	107-14-2
C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub> +			<del></del>			<u> </u>	
$CH_2 = CCI_2$	9.79±0.04	226	947	0.5±0.2	2.3±0.7	77PED/RYL	75-35-4
	See also: 82VON	228	953 402 AT	2.0	8.4		
	GCC 8150. 624 O14	/ASD, SIKIN	WKMI.				
(Z)-CHCl = CHCl	9.66±0.01	224	936	1±0.2	4±1	83KOL/PAP	156-59-2
	See also: 82VON	<i>225</i> /ASB, 81KIN	<i>942</i> A/KAT.	2	10		
		•					
(E)-CHCl = CHCl	9.65±0.02	224 225	937 <i>942</i>	1±0.2 <i>3</i>	6±1 <i>11</i>	83KOL/PAP	156-60-5
	See also: 82VON			3	11		
C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub> F <sub>2</sub> +							
CF <sub>2</sub> CICH <sub>2</sub> CI	≤11.8 IP from 81DUM	≤142 ⁄DUP.	≤596	-130±2	−543±10	83KOL/PAP	1649-08-7
C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub> O <sup>†</sup> CHCl <sub>2</sub> CHO	10.5 IP is onset of pho	(199) otoelectron b	(833) and (81KIM/K	-43±5 (AT).	180±20	*EST	79-02-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub> O <sup>+</sup>							
CH <sub>2</sub> CICOCI	(11.0) IP is onset of pho	(195) otoelectron b	(815) pand.	−59±2	-246±9	77PED/RYL	79-04-9
C <sub>2</sub> H <sub>2</sub> Cl <sub>3</sub> O <sub>2</sub> +							
CCI <sub>3</sub> C(OH) <sub>2</sub>	From proton affi	76 nity of CCl <sub>3</sub>	318 COOH (RN	76-03-9)(PA =	183.5 kcal/mo	ol, 768 kJ/mol).	
C <sub>2</sub> H <sub>2</sub> Cl <sub>4</sub> <sup>+</sup>							
CH <sub>2</sub> CICCI <sub>3</sub>	(11.1) IP is onset of pho	(220) stoelectron b	(919) and (81KIM	-36±0.2 /KAT).	-152±1	83KOL/PAP	630-20-6
(CHCl <sub>2</sub> ) <sub>2</sub>	(≤11.62) IP from 81KIM/F	(≤232) ¢AT.	(≤971)	-36±1	-150±5	77PED/RYL	79-34-5
C <sub>2</sub> H <sub>2</sub> F <sup>+</sup>							
CH <sub>2</sub> CF	From appearance proton affinity of					lue from HEI/BAR, 84BEA/E	YE.
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> +							
$CH_2 = CF_2$	10.29±0.01	155 <i>157</i>	648 <i>655</i>	-82±2 -81	-345±10 -338	76WIL/LEB	75-38-7
	See also: 81BIE/	VON, 81BIE	/ASB.				
(Z)-CHF=CHF	10.23 See also: 81BIE/	165 VON, 81BIE	690 /ASB, 79JO	–71 C/LOH, 81MAI/	-297 THO2.	80STA/VOG	1630-77-9
(E)-CHF=CHF	10.21 See also: 81BIE/V	165 /ON, 81BIE	692 /ASB, 79JO	-70 C/LOH.	-293	80STA/VOG	1630-78-0
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> +				<del> </del>			<del>,</del>
CHF <sub>2</sub> CHF	From proton affi	(79) nity of CF <sub>2</sub> =	(332) CHF (RN 3	59-11-5). PA =	~169 kcal/mo	ol, ~707 kJ/mol.	
CF <sub>3</sub> CH <sub>2</sub>	(10.6±0.1)	(120)	(506)	-124±2	−517±8	82MCM/GOL	3248-58-6
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> I + CF <sub>3</sub> CH <sub>2</sub> I	9.998	75	316	-155±1	-649±4	83KOL/PAP	353-83-3
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> NO <sup>+</sup> CF <sub>3</sub> CONH <sub>2</sub>	(10.8) IP from 81ASB/S	(49) VE.	(206)	-200	-836	*EST	354-38-1
С <sub>2</sub> Н <sub>2</sub> F <sub>3</sub> O <sup>+</sup> СР <sub>3</sub> СНОН	From proton affir	12 nity of CF <sub>3</sub> C	49 HO (RN 75-9	90-1). PA = 165	5.1 kcal/mol, (	591 kJ/mol.	
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> O <sub>2</sub> + CF <sub>3</sub> C(OH) <sub>2</sub>	From proton affir	-50 nity of CF <sub>3</sub> C	-208 OOH (RN 76	5-05-1). PA = 1	69.0 kcal/mol	l, 707 kJ/mol.	

Table 1. Positive Ion Table - Continued

	Table	1. FUSIU	Te Ion Table	e - Continu	men =====		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo		∆ <sub>f</sub> H(Ner kcal/mol		Neutral reference	CAS registry number
$C_2H_2I_2^+$ (Z)-CHI = CHI	(8.6) IP is onset of pho	(248) toelectron	(1037) band.	49.5±0.3	207.2±1.1	77PED/RYL	590-26-1
(E)-CHI ≈ CHI	(8.6) IP is onset of pho	(248) toelectron	(1037) band.	49.5±0.3	207.2±1.1	77PED/RYL	590-27-2
C <sub>2</sub> H <sub>2</sub> N <sup>+</sup> CH <sub>2</sub> CN	(10.0) Δ <sub>f</sub> H(Ion) from a <sub>f</sub> IP cited is Δ <sub>f</sub> H(Io					82MCM/GOL AR/MCI)	2932-82-3
C <sub>2</sub> H <sub>2</sub> N <sub>2</sub> Se <sup>+</sup>					······································	· · · · · · · · · · · · · · · · · · ·	
Se N	(8.9) IP from 80BOC/A	(290) XYG, 82LE	(1212) EV/LIA.	84	353	*EST	26223-16-5
C <sub>2</sub> H <sub>2</sub> N <sub>4</sub> +							
	(9.14)	(322)	(1346)	111	464	82JOS	290-96-0
C <sub>2</sub> H <sub>2</sub> O +				-		· · · · · · · · · · · · · · · · · · ·	
HC≅COH	$\Delta_{ extsf{f}}H$ (Ion) from ap	247 opearance	1033 potential deteri	nination (86BA	A/WEI).		
CH <sub>2</sub> CO	9.61±0.02 See also: 81BOC/	210.2 <i>210.9</i> HIR.	879.6 <i>882.7</i>	-11.4±0.6 -10.7	-47.7±2.5 -44.6	71NUT/LAU	463-51-4
C <sub>2</sub> H <sub>2</sub> O <sub>2</sub> + (CHO) <sub>2</sub>	10.1 IP is onset of pho	182 toelectron	763 band (80VON/		-211.9±0.8 AT).	77PED/RYL	107-22-2
С <sub>2</sub> Н <sub>2</sub> О <sub>4</sub> <sup>+</sup> нооссоон	(10.8) IP is onset of pho	(74) toelectron	(310) band.	~175±0.7	-732±3	77PED/RYL	144-62-7
C <sub>2</sub> H <sub>2</sub> S + CH <sub>2</sub> =C=S	(8.77)	(242)	(1011)	39	165	*EST	18282-77-4
C112=C=3	Cited IP is onset of	(234) of photoele	<i>(979)</i> ectron band (77	ROS/SOL). H	eat of formatio		10202*//*4

Table 1. Positive Ion Table - Continued

		c 1. 1 Usitiv		c - Contin			
ION Neutral	Ionization potentia eV	l Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>2</sub> S <sub>2</sub> +							
□s I s	(8.5) IP is onset of ph	(258) otoelectron b	(1080) and (83SCH/	62 SCH).	260	*EST	7092-01-5
$C_2H_2Se^+$ $CH_2=C=Se$	8.7 IP is onset of ph	(256) otoelectron b	(1071) and (80BOC	55 /AYG).	232	*EST	61134-37-0
C <sub>2</sub> H <sub>3</sub> +	***************************************					<u> </u>	
C <sub>2</sub> H <sub>3</sub>	8.9  Heat of formation	265.9 <i>267.9</i> on of ion fron	1112 1120.9 n appearance	63.4±1 <i>62.7</i> potential measu	265.3±4 262.2 arement;	85KIE/WEI	2669-89-8
	IP from J.L. Bea		-				
C <sub>2</sub> H <sub>3</sub> Br <sup>+</sup> C <sub>2</sub> H <sub>3</sub> Br	9.80±0.02 See also: 82VON	244.9 <i>248.5</i> V/ASB, 83CA	1024.8 <i>1039.7</i> M/CIU, 84M	18.9±0.5 <i>22.5</i> IL/BAE.	79.3±1.9 <i>94.2</i>	77PED/RYL	593-60-2
C <sub>2</sub> H <sub>3</sub> BrHg <sup>+</sup>		<del></del>					
CH <sub>2</sub> =CHHgBr	(9.8) IP is onset of pho	(256) otoelectron b	(1072) and (81BAI/0	30 CHI).	126	*EST	16188-37-7
C <sub>2</sub> H <sub>3</sub> BrO <sup>+</sup> CH <sub>3</sub> COBr	10.4±0.1 IP is onset of pho	194 otoelectron b	813 and (82LEV/		~190.4±0.5 AT).	77PED/RYL	506-96-7
C <sub>2</sub> H <sub>3</sub> BrO <sub>2</sub> + CH <sub>2</sub> BrCOOH	(10.4) IP is onset of phe	(145)	(608)	-94.4±1.5	-395±6	*EST	79-08-3
	II is chost of pin						
C <sub>2</sub> H <sub>3</sub> Cl + C <sub>2</sub> H <sub>3</sub> Cl	9.99±0.02	236 <i>238</i>	987 <i>995</i>	5±0.5	23±2 <i>31</i>	83KOL/PAP	75-01-4
	See also: 83CAM	1/CIU, 82VO	N/ASB, 81KI	M/KAT.			
C <sub>2</sub> H <sub>3</sub> ClF <sub>2</sub> + CH <sub>3</sub> CF <sub>2</sub> Cl	11.98±0.01	149.7	626.2	-126.6±1.2	-529.7±5.0	78PAP/KOL	75-68-3
C <sub>2</sub> H <sub>3</sub> CIN <sup>+</sup> CICH <sub>2</sub> CNH	From proton affi	207 nity of CICH	865 2CN (RN 107	-14-2). PA = 1°	79.5 keal/mol,	751 kJ/mol.	
C <sub>2</sub> H <sub>3</sub> ClO <sup>+</sup> CH <sub>3</sub> COCl	10.85±0.05	192 <i>194</i>	804 <i>813</i>		−243±1 −234	77PED/RYL	75-36-5
	See: 81KIM/KA7	Γ					

Table 1. Positive Ion Table - Continued

	Table	. FOSIL	ive Ion Tabl	e - Contin	ueu 		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>2</sub> H <sub>3</sub> ClO <sup>+</sup> CH <sub>2</sub> ClCHO	10.48±0.03 See: 81KIM/KAT.	(195)	(816)	-47±4	-195±15	*EST	107-20-0
C <sub>2</sub> H <sub>3</sub> ClO <sub>2</sub> <sup>+</sup> CH <sub>2</sub> ClCOOH	(10.7) IP is onset of phot	(143) oelectron	(597) ı band.	-104±2	-435±9	77PED/RYL	79-11-8
C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> <sup>+</sup> CHCl <sub>2</sub> CH <sub>2</sub> Cl	11.0 IP is onset of phot	218 oelectron	912 a band (81KIM/	-36±0.5 KAT).	-149±2	77PED/RYL	79-00-5
CH <sub>3</sub> CCl <sub>3</sub>	(11.0) IP is onset of phot	(219) oelectron	(916) a band (81KIM/		-144.9±0.6	83KOL/PAP	71-55-6
С <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> O <sup>+</sup> ссі <sub>3</sub> сн <sub>2</sub> он	(10.94) IP from 83KOP/M	(182) OL.	(763)	(-70)	(-293)	*EST	115-20-8
C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> Si <sup>+</sup> CH <sub>2</sub> =CHSiCl <sub>3</sub>	(≤11.0) IP from 81KHV/Z	(≤144) YK.	(≤603)	-109	-458	*EST	75-94-5
C <sub>2</sub> H <sub>3</sub> F + C <sub>2</sub> H <sub>3</sub> F	10.363±0.015 See also: 81BIE/V	205.8 ON, 81BI	861.1 IE/ASB.	-33.2±0.4	-138.8±1.7	76WIL/LEB	75-02-5
C <sub>2</sub> H <sub>3</sub> FO <sup>+</sup> CH <sub>3</sub> COF	11.51±0.02 See: 81KIM/KAT.	159	667	-106±0.7	-444±3	77PED/RYL	557-99-3
С <sub>2</sub> Н <sub>3</sub> F <sub>2</sub> + СН <sub>2</sub> FCHF	From proton affin	130 ity of (E)	543 -CHF=CHF (I	N 1630-78-0).	PA = 166 kcal	l/mol, 694 kJ/mol.	
CH <sub>3</sub> CF <sub>2</sub>	(7.92) Value of $\Delta_f H(Ion)$ value from proton PA = 176 kcal/mo	affinity o	$f CH_2 = CF_2 (F$				40640-67-3
С <sub>2</sub> Н <sub>3</sub> F <sub>3</sub> <sup>+</sup> СН <sub>3</sub> СF <sub>3</sub>	12.9±0.1 IP from 73GOL/K	118 <i>122</i> OR.	496 <i>509</i>	-179±0.7 -176	−749±3 −736	83KOL/PAP	420-46-2
С <sub>2</sub> Н <sub>3</sub> F <sub>3</sub> O <sup>+</sup> СР <sub>3</sub> СН <sub>2</sub> ОН	11.49 IP from 83KOP/M	53 OL.	221	212±1	-888±5	77PED/RYL	75-89-8
C <sub>2</sub> H <sub>3</sub> I + CH <sub>2</sub> =CHI	9.30	(246)	(1027)	31	130	*EST	593-66-8

## **GAS-PHASE ION AND NEUTRAL THERMOCHEMISTRY**

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H$ (Ion)				Δ <sub>f</sub> H(Neutral) Neutral CAS registry				
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>2</sub> H <sub>3</sub> N <sup>+</sup>									
CH <sub>3</sub> CN	12.194±0.005	299 <i>300</i>	1251 <i>1258</i>	18±0.2 <i>19</i>	74±1 <i>81</i>	83AN/MAN	75-05-8		
	IP from 81RID/RA	AY. See also		P, 840HN/MA	T,82ALL/M	IG, 81KIM/KAT, 851	HAR/MCI.		
CH <sub>2</sub> CNH		(240)	(1004)						
	From appearance	<i>(242)</i> potential de	(1011) eterminations.						
CH <sub>3</sub> NC	11.24	300	1257	41±0.2	173±1	83AN/MAN	593-75-9		
-		302	1262	43	178				
	See also: 82CHE/I	AP, 81BE	V/SAN, 85HA 	R/MCI.					
C <sub>2</sub> H <sub>3</sub> NO <sup>+</sup>									
CH <sub>3</sub> NCO	(10.67±0.02)	(215)	(899)	-31	-130	75COM/DES	624-83-9		
C <sub>2</sub> H <sub>3</sub> NS <sup>+</sup>									
CH <sub>3</sub> SCN	(9.96±0.05)	(268)	(1121)	38	160	82TN270	556-64-9		
CH <sub>3</sub> NCS	(9.25±0.03)	(245)	(1023)	31	131	82TN270	556-61-6		
<b>U</b>		(247)	(1032)	<i>33</i>	140				
C <sub>2</sub> H <sub>3</sub> N <sub>3</sub> +									
TZZZ	10.06 See: 81PAL/SIM.	291	1218	59	247	82JOS	288-36-8		
I Z Z I	(9.8) IP is onset of photo	(272) pelectron b	(1140) and (81PAL/S	46±0.5 IM).	194±2	85FAO/AKA	288-88-0		
С <sub>2</sub> H <sub>3</sub> O <sup>+</sup>			·	<del>-                                    </del>		<u> </u>	·		
CH <sub>3</sub> CO	7.0 $\Delta_f H(\text{Ion})$ at 298 K 83LIF/BER. Value PA = 198.0 kcal/m determined IP of the	e derived fr ol, 828 kJ/n	om proton affi nol. IP cited is	nity of ketene $\Delta_f H(\text{Ion}) - \Delta_f H$	is 157 kcal/mo H(Neutral). B		15762-07-9		
CH <sub>2</sub> =COH	Δ <sub>f</sub> H(Ion) from app 82HOL/LOS2, 83E	-		inations (82H)	OL/LOS,				
Å.	Δ <sub>f</sub> H(Ion) from app	(201) pearance po	(841) tential measur	rements. See a	lso: 83BUR/I	HOL2.	31586-84-2		

Table 1. Positive Ion Table - Continued

С <sub>2</sub> H <sub>3</sub> O <sub>2</sub> I <sup>+</sup> СH <sub>2</sub> ICOOH  С <sub>2</sub> H <sub>3</sub> S <sup>+</sup> СH <sub>3</sub> CS  .	(9.6) IP is onset of photon	(327) toelectron b	(1367) and.	105	441		
CH₃CS	From proton affin				<b>17</b> ♣	*EST	64-69-7
CH <sub>3</sub> CS	From proton affin					<u> </u>	····
C <sub>2</sub> H <sub>3</sub> V <sup>+</sup>	842 kJ/mol. Origi $\Delta_f H(CH_2 = C = S$	nal authors	recommend valu	e of 210 kca			
VC <sub>2</sub> H <sub>3</sub>	$\Delta_{\mathrm{f}}H$ (Ion) from or	(266) iset energy	(1115) of endothermic 1	reaction (84A	ARI/ARM, 85ELI	K/ARM). 0 K val	ue.
C <sub>2</sub> H <sub>4</sub> +						· · · · · · · · · · · · · · · · · · ·	·····
C <sub>2</sub> H <sub>4</sub>	10.507±0.004	254.8 256.8	1066 1074	12.5±0.2 14.5	52.2±1 60.7	77PED/RYL	74-85-1
	See also: 81KIM/I	CA1, 84PU	L/IRE.	<del></del>			
C <sub>2</sub> H <sub>4</sub> BrCl <sup>+</sup> CH <sub>2</sub> BrCH <sub>2</sub> Cl	10.67±0.03 See: 81KIM/KAT	225	942	-21±1	-87±5	83KOL/PAP	107-04-0
СН <sub>3</sub> СНСІВт	10.37	219±1	918±5	-20±1	-83±5	83KOL/PAP	593-96-4
C <sub>2</sub> H <sub>4</sub> BrF <sup>+</sup> CH <sub>2</sub> FCH <sub>2</sub> Br	≤10.57	(≤184)	(≤769)	-60±5	-251±20	83KOL/PAP	762-49-2
					202111		
C <sub>2</sub> H <sub>4</sub> Br <sub>2</sub> + CH <sub>2</sub> BrCH <sub>2</sub> Br	10.37 See: 78GAN/PEE	230 , 81KIM/KA	962 AT, 77STA/WIE	-9±0.2	-38,3 ± 1,2 -39£T	83KOL/PAP	106-93-4
- CH <sub>3</sub> CHBr <sub>2</sub>	10.17	226	944	-9±1	- 26 7± 1.9 -37±6	83KOL/PAP	557-91-5
C <sub>2</sub> H <sub>4</sub> Cl <sup>+</sup>							
CH <sub>3</sub> CHCl	From appearance	(199) potential (1	(832) .1.20 eV) in CH <sub>3</sub>	CHCl <sub>2</sub> .			
CH <sub>2</sub> CICH <sub>2</sub>	From appearance	(204) potential (1	(855) 1.47 eV) in CH <sub>2</sub>	CICH <sub>2</sub> CI.			
C <sub>2</sub> H <sub>4</sub> ClO <sub>2</sub> +		· <u>.</u>				···· <u>···</u>	
CH <sub>2</sub> CIC(OH) <sub>2</sub>	From proton affin	79 ity of CH <sub>2</sub> C	332 CICOOH (RN 79	-11-8). PA :	= 182.4 kcal/mol,	763 kJ/mol.	
C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub> +							·- <u></u>
CH <sub>3</sub> CHCl <sub>2</sub>	11.06 See also: 81KIM/F	224 229	936 <i>959</i>	-31±0.7 -26	-131±3 -108	83KOL/PAP	75-34-3

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	· · ·	$\Delta_{\rm f} H({ m Ne}$	ustral)	Neutral	CAS registry
Neutral	eV	kcal/mol		•	kJ/mol	reference	number
C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub> + CH <sub>2</sub> ClCH <sub>2</sub> Cl	11.04	222 225	931 <i>9</i> 42	-32±0.2 -29	-134±1 - <i>123</i>	83KOL/PAP	107-06-2
	See also: 81KIM/	KAT.					
С <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub> O <sup>+</sup> сн <sub>3</sub> оснсі <sub>2</sub>	(10.6) IP is onset of pho	(191) toelectron b	(800) and (80VER,	-53 /SAL).	-222	*EST	4885-02-3
C <sub>2</sub> H <sub>4</sub> Cl <sub>3</sub> O + CCl <sub>3</sub> CH <sub>2</sub> OH <sub>2</sub>	From proton affir	118 hity of CCl <sub>3</sub> 0	495 CH <sub>2</sub> OH (RN	115-20-8). PA	= 177.4 kcal/i	mol, 742 kJ/mol.	
C <sub>2</sub> H <sub>4</sub> F <sup>+</sup> CH <sub>3</sub> CHF	7.93 $\Delta_{\mathbf{f}}H(\text{Ion}) \text{ from pr}$ $\Delta_{\mathbf{f}}H(\text{Neutral}) = 1$			-26 RN 75-02-5). PA	-106 A = 175 kcal/	? mol, 732 kJ/mol.	
C <sub>2</sub> H <sub>4</sub> FO <sub>2</sub> + CH <sub>2</sub> FC(OH) <sub>2</sub>	From proton affin	42 hity of CH <sub>2</sub> F	176 COOH (RN	144-49-0). PA	= 183.5 kcal/	mol, 768. kJ/mol.	
C <sub>2</sub> H <sub>4</sub> F <sub>2</sub> + CH <sub>3</sub> CHF <sub>2</sub>	11.87±0.03 IP from 84HEI/BA	154 AR, 85HEI/	644 BAR.	−120±1	-501±6	75CHE/ROD	75-37-6
C <sub>2</sub> H <sub>4</sub> F <sub>3</sub> N <sup>+</sup> CF <sub>3</sub> CH <sub>2</sub> NH <sub>2</sub>	(9.8±0.1) IP is average of va	(58) lues from 83	(244) 3MOL/PIK3,	(-167) 79AUE/BOW.	(-701)	*EST	753-90-2
С <sub>2</sub> H <sub>4</sub> F <sub>3</sub> O <sup>+</sup> СF <sub>3</sub> CH <sub>2</sub> OH <sub>2</sub>	From proton affin PA = 169.0 kcal/n			5-89-8). See als	o: 85MCM/K	ЕВ.	
C <sub>2</sub> H <sub>4</sub> Fe <sup>+</sup> Fe H <sub>2</sub> C CH <sub>2</sub>	Δ <sub>f</sub> H(Ion) from 84	(256) JAC/JAC.	(1071)				
C <sub>2</sub> H <sub>4</sub> I <sub>2</sub> + CH <sub>2</sub> ICH <sub>2</sub> I	(9.4) IP is onset of phot	(233) oelectron ba	(973) and.	15.8±0.3	66.3±1.4	77PED/RYL	624-73-7
C <sub>2</sub> H <sub>4</sub> N <sup>+</sup> CH <sub>3</sub> CNH	. Prom proton affin	195 ity of CH <sub>3</sub> C	817 N (RN 75-05-	8). PA = 188.	2 kcal/mol, 78	7 kJ/mol.	

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Table 1. Positive Ion Table - Continued

YON		1. 1 051111					
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
		Real/IIIOI		Real/IIIOI		Telefence	number
C <sub>2</sub> H <sub>4</sub> N <sup>+</sup>							
CH <sub>3</sub> NCH	77	205	860	e or coctan war	ND 04144118		
	From proton affin PA = 201.4 kcal/	_		5-9) (86KNI/FI	Œ, 86MAU/K	AR).	
C <sub>2</sub> H <sub>4</sub> NO <sup>+</sup>							
CH <sub>3</sub> NHCO	Voor anaton offi	150	628	02 0\/05V A D /	CTTEN DA -	194 & 11/01	
	From proton affin 772. kJ/mol.	nity of CH31	1CO (IGN 624-	03-9)(WAIV	31 <i>b)</i> . FA =	184.5 Kcal/mol,	
C <sub>2</sub> H <sub>4</sub> NS <sup>+</sup>							
CH <sub>3</sub> SCNH		212	886				
	From proton affin 804. kJ/mol.	nity of CH <sub>3</sub> S	SCN (RN 556-	54-9) (85KAR/	STE). PA =	192. kcal/mol,	
CH₃NCSH		204	853				
J	From proton affin 807.5 kJ/mol.	nity of CH <sub>3</sub> l	NCS (RN 556-6	61-6) (85KAR/	STE). PA =	193.0 kcal/mol,	
C <sub>2</sub> H <sub>4</sub> N <sub>2</sub> +							
$CH_2 = NN = CH_2$	(8.95) See also: 84KIR/I	(264) POP.	(1104)	58	241	82JOS	503-27-5
C <sub>2</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> +					<del></del>		
NH <sub>2</sub> COCONH <sub>2</sub>	(9.41)	(121)	(505)	<del>-</del> 96±1	-403±5	77PED/RYL	471-46-5
C <sub>2</sub> H <sub>4</sub> N <sub>3</sub> +		•					
H - N		199	835				
\/\_\\\	From proton affin	nity of 1H-1,	2,4-Triazole (1	RN 288-88-0) (	86MAU/LIE).		
H	PA = 212.4  kcal/	mol, 889. kJ/	mol.				
C <sub>2</sub> H <sub>4</sub> N <sub>4</sub> +							
$NCN = C(NH_2)_2$	(8.4)	(230)	(963)	36	153	77PED/RYL	10191-60-3
	IP is onset of pho	toelectron b	and (80KLA/I	BUT).			
C <sub>2</sub> H <sub>4</sub> O <sup>+</sup>							
CH <sub>3</sub> CHO	10.229±0.0007	<u>196.3</u>	<u>821.1</u>	-39.6±0.1	-165.8±0.4	77PED/RYL	75-07-0
		<u>198.9</u>	<u>831.9</u>	-37.0	-155.0		
	See also: 82JOH/	POW, 72PO	T/SOR, 81EL	S/ALL, 81KIM	I/KAT, 77STA	/WIE.	
CH <sub>2</sub> = CHOH	9.14	181	757	-30	-125	82HOL/LOS3	557-75-5
2	From 82HOL/LC			- <del>-</del>			-
CII COII		(207)	(0(5)				
CH <sub>3</sub> COH	$\Delta_{f}H$ (Ion) from a	(207) ppearance p	(865) otential deterr	ninations (83T	ER/WEZ).		
	efertion) nom a	Lhourning h	J.J.1114 WOLUI		4		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>4</sub> O <sup>+</sup>		-				
Å	10.566±0.01 See also: 82JOH/P	231.0 966.8 <i>234.1 979.4</i> POW, 81KIM/KAT, 82	−12.6±0.1 − <i>9.6</i> BIE/ASB.	-52.6±0.6 -40.1	77PED/RYL	75-21-8
C <sub>2</sub> H <sub>4</sub> OS <sup>+</sup> CH <sub>3</sub> COSH	10.00±0.02	189 790	-42±2	-175±8	77PED/RYL	507-09-5
S= 0	9.2 IP is onset of photo	(205) (858) oelectron band.	<b>-</b> 7	-30	*EST	7117-41-1
C <sub>2</sub> H <sub>4</sub> OS <sub>2</sub> +						
H <sub>2</sub> C S CH <sub>2</sub>	(8.8) IP is onset of photo	(199) (831) pelectron band (82BL)	-4 O/COR).	-18	*EST	58816-63-0
С <sub>2</sub> Н <sub>4</sub> О <sub>2</sub> + нсоосн <sub>3</sub>	10.815±0.005 See also: 81KIM/K	164.4 688.0 AT, 85CAN/HAM.	-85.0±0.2	−355.5±0.7	77PED/RYL	107-31-3
сн <sub>3</sub> соон	10.66±0.02 See also: 81HOL/F	142.5 596.4 <i>145.9 610.4</i> IN, 80VON/BIE, 81K	-99.9±0.1	-432.1±0.4 -418.1±0.4	78CHA/ZWO	64-19-7
СН <sub>2</sub> С(ОН) <sub>2</sub>	$\Delta_f  extcolor{H}( extcolor{lon})$ from app	120 503 pearance potential det	erminations.			
НОСН = СНОН	(9.62±0.10) IP from 86TUR/H	(146) (612) AV3.	-76	-316	*EST	
сн <sub>3</sub> осон	$\Delta_{ m f} H$ (Ion) from app	158 661 pearance potential of n	netastable ion (83°	TER/WEZ).		
CH <sub>2</sub> CO(H <sub>2</sub> O)		(138) (579) pearance potential dete	erminations (86PC	OS/RUT).		
C <sub>2</sub> H <sub>4</sub> O <sub>2</sub> S <sup>+</sup>						
	(10.3) IP is onset of photo	(177) (741) selectron band.	-60	-253	*EST	1782-89-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>2</sub> H <sub>4</sub> O <sub>2</sub> S <sub>2</sub> +  H <sub>2</sub> C S CH <sub>2</sub> 0 S 0	(9.4) IP is onset of pho	(159) stoelectron b	(666) and (82BLO)	-58	-241	*EST	60743-07-9
H <sub>2</sub> C S CH <sub>2</sub> .	(8.6) IP is onset of pho	(167) stoelectron b	(700) and (82BLO/	-31 COR).	-130	*EST	60743-08-0
С <sub>2</sub> н <sub>4</sub> О <sub>3</sub> +	(10.1) IP is onset of pho	(183) toelectron ba	(765) and.	-50	-209	82CRE	289-14-5
C <sub>2</sub> H <sub>4</sub> O <sub>3</sub> S <sub>2</sub> +	(9.6) IP is onset of pho	(137) toelectron ba	(573) and (82BLO/	-84 COR).	-353	*EST	60743-10-4
C <sub>2</sub> H <sub>4</sub> O <sub>4</sub> S <sub>2</sub> +	(10.6) IP is onset of pho	(107) toelectron ba	(447) and (82BLO/	–138 COR).	-576	*EST	21511-46-6
C <sub>2</sub> H <sub>4</sub> S <sup>+</sup> CH <sub>3</sub> CHS	8.98±0.02 See also: 83BUT/	218 BAE2.	910	11	44	79JOS	6851-93-0
Š	9.051±0.006  See also: 82BUT/	228 <i>231</i> BAE, 83BU	955 <i>967</i> I'/BAE2.	19.6±0.3 22.4	82.1±1.2 93.7	77PED/RYL	420-12-2
C <sub>2</sub> H <sub>4</sub> S <sub>2</sub> +	(8.5) IP is onset of pho	(218) toelectron ba	(914) and (82BLO/	22 COR).	94	*EST	287-53-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>4</sub> S <sub>3</sub> +						<del></del>	
5-5 ( <sub>S</sub> )	(≤8.72)	(≤196)	(≤818)	-5	-23	•EST	289-16-7
C <sub>2</sub> H <sub>4</sub> Sc <sup>+</sup>							
H <sub>2</sub> C CH <sub>2</sub>	$\Delta_{\mathrm{f}}H$ (Ion) from $c$	(215) onset of endo	(899) thermic react	ion (84TOL/BI	BA). See also:	86ELK/ARI.	
C <sub>2</sub> H <sub>4</sub> Se <sup>+</sup>							
CH <sub>3</sub> CH = Se	(8.3) IP is onset of pho	(219) otoelectron b	(915) and (84BOC/	27 AYG).	114	*EST	67281-48-5
C <sub>2</sub> H <sub>5</sub> +				···			
C <sub>2</sub> H <sub>5</sub> + C <sub>2</sub> H <sub>5</sub>	8.13	215.6±1.0 218.5±1.0	<u>914±4</u>	28 <i>31</i>	118 <i>130</i>	84CAO/BAC	14936 <del>-94-8</del> 2025-Sc-1
	Heat of formatio 81TRA/MCL, 80 $\Delta_f H$ (Neutral) ba Experimental IP	BAE, 82DY sed on D[C-	K/JON2, 82R0 H] = 100.5 kc	OS/BUF). IP gi		n) - Δ <sub>f</sub> H(Neutral).	
C <sub>2</sub> H <sub>5</sub> Br <sup>+</sup>							
C <sub>2</sub> H <sub>5</sub> Br	10.28 See also: 81KIM/	222.2 <i>227.4</i> KAT, 85OH	929.6 <i>951.5</i> N/IMA.	-14.9±0.2 -9.6±0.2		77PED/RYL	74-96-4
C II P:-O +							
C <sub>2</sub> H <sub>5</sub> BrO <sup>+</sup> CH <sub>2</sub> BrCH <sub>2</sub> OH(gauche)	(≤10.75) See also: 84KOB,		(≤820) Г,85OHN/IM		(-217)	*EST	540-51-2
CH <sub>2</sub> BrCH <sub>2</sub> OH(trans)	(≤10.65) See also: 84KOB,		(≤811) Г, 85OHN/IM		(-217)	•EST	540-51-2
C <sub>2</sub> H <sub>5</sub> Cl <sup>+</sup>		<del></del>		····	<del></del>		
C <sub>2</sub> H <sub>5</sub> Cl	10.97±0.02	226	946		-112.1±0.5	77PED/RYL	75-00-3
	See also: 830HN	<i>230</i> /IMA, 81KIN	961 1/KAT.	-23.3	<i>−97.6</i>		
СН₃СНСІН	$\Delta_{\mathrm{f}} H$ (Ion) from a	227 ppearance po	951 stential determ	nination (83HC	L/BUR).		ર
C <sub>2</sub> H <sub>5</sub> ClHg <sup>+</sup>							
C <sub>2</sub> H <sub>5</sub> HgCl	9.9 IP is onset of pho	212 toelectron ba	888 and (81BAI/C		−67±4	80TEL/RAB	107-27-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{f}})$	on)	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>2</sub> H <sub>5</sub> ClO <sup>+</sup>							
C <sub>2</sub> H <sub>5</sub> OCI	(10.13±0.02)	(212)	(886)	-22	-91	*EST	624-85-1
	IP from 81COL/F	RO.					
CH <sub>2</sub> CICH <sub>2</sub> OH	(10.52)	(181)	(756)	-62	-259	*EST	107-07-3
33.23.33.23.3	IP is onset of pho						
CH.OCH.C	(10.2)	(184)	(769)	-51	-215	*EST	107-30-2
СН <sub>3</sub> ОСН <sub>2</sub> СІ	(10.2) IP is onset of pho	` '	• •		-213	LSI	107-30-2
C <sub>2</sub> H <sub>5</sub> CIS <sup>+</sup>							
CH <sub>3</sub> SCH <sub>2</sub> Cl	(≤7.74)	(≤157)	(≤657)	-22	-90	*EST	2373-51-5
C <sub>2</sub> H <sub>5</sub> Cl <sub>2</sub> P + C <sub>2</sub> H <sub>5</sub> PCl <sub>2</sub>	9.3	153	638	-62±4	-259±18	80TEL/RAB	1498-40-4
~Z.151 C12	IP is onset of pho						10 ,01
C-H-Cl-c:+							
C <sub>2</sub> H <sub>5</sub> Cl <sub>3</sub> Si + C <sub>2</sub> H <sub>5</sub> SiCl <sub>3</sub>	(10.74±0.04)	(122)	(509)	-126±6	-527±25	80TEL/RAB	115-21-9
. 4	· · · · · · · · · · · · · · · · · · ·	` '	` '				
CH <sub>3</sub> S <sub>1</sub> Cl <sub>2</sub> (CH <sub>2</sub> Cl)	(40.4)	(120)	(520)	111	165	*EST	1558-33-4
	(10.4) IP is onset of pho	(129) toelectron t	(538) oand (81ZYK/	-111 KHV).	<del>-465</del>	E31	1330-33-4
a x n+	-			<u>-</u>			
C <sub>2</sub> H <sub>5</sub> F + C <sub>2</sub> H <sub>5</sub> F	(11.6)	(205)	(856)	-63±0.5	-263±2	75CHE/ROD	353-36-6
~2···5·	IP is onset of pho		, ,				
C <sub>2</sub> H <sub>5</sub> FO <sup>+</sup>							
CH <sub>2</sub> FCH <sub>2</sub> OH	(10.66)	(146)	(612)	-100	-417	*EST	371-62-0
- <b>-</b>	IP from 83KOP/N	IOL.					
C <sub>2</sub> H <sub>5</sub> F <sub>2</sub> N <sup>+</sup>						· · · · · · · · · · · · · · · · · · ·	
CF <sub>2</sub> HCH <sub>2</sub> NH <sub>2</sub>	(9.4)	(326)	(1366)	110	462	*EST	430-67-1
	IP from 79AUE/I	BOW.					
C <sub>2</sub> H <sub>5</sub> F <sub>2</sub> O <sup>+</sup>							
CF <sub>2</sub> HCH <sub>2</sub> OH <sub>2</sub>		34	144			_	
	From proton affir	nity of CF <sub>2</sub> I	HCH <sub>2</sub> OH (RN	l 359-13-7). PA	= 176.2 kcal,	/mol, 737 kJ/mol.	
C <sub>2</sub> H <sub>5</sub> F <sub>3</sub> N <sup>+</sup>							
CF <sub>3</sub> CH <sub>2</sub> NH <sub>3</sub>		<del>-4</del>	-18				
	From proton affii	nity of CF <sub>3</sub> 0	CH <sub>2</sub> NH <sub>2</sub> (RN	753-90-2). PA	= 202.5 kcal/i	mol, 847 kJ/mol.	
C <sub>2</sub> H <sub>5</sub> I +							
C <sub>2</sub> H <sub>5</sub> I	9.346	213.3	891.9	-2.2±0.2	-9.0±0.9	77PED/RYL	75-03-6
		216.9	907.8	1.6	6.9		
	See: 78LIA/AUS,	, 830HN/IN	/A, 81KIM/K	AT.			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>5</sub> IO <sup>+</sup>							
gauche-ICH <sub>2</sub> CH <sub>2</sub> OH	9.73	(186)	(778)	-38	-161	*EST	624-76-0
trans-ICH <sub>2</sub> CH <sub>2</sub> OH	9.60	(183)	(765)	-38	-161	*EST	624-76-0
C <sub>2</sub> H <sub>5</sub> N <sup>+</sup>							
$CH_2 = NCH_3$	(9.4) IP is onset of pho	(234) stoelectron b	(979) and. See also: 8	17 6WER.	72	69BEN/CRU	1761-67-7
CH <sub>3</sub> CH=NH	(9.6) IP is onset of pho	(222) toelectron b	(930) and (86LAF/G	2±4 ON).	8±17	79ELL/EAD	20729-41-3
CH <sub>2</sub> =CHNH <sub>2</sub>	(8.20) IP from 84ALB/A	(196) ALL2.	(820)	7	29	81ELL/DIX	593-67-9
Z,	9.2±0.1 See also: 82BIE/A	242 ASB.	1014	30.2±0.2	126.5±0.9	77PED/RYL	151-56-4
C <sub>2</sub> H <sub>5</sub> NO <sup>+</sup>							
CH <sub>3</sub> CONH <sub>2</sub>	9.65±0.03 See also: 81ASB/5	165 SVE.	693	−57.0±0.2	-238.3±0.8	77PED/RYL	60-35-5
(E)-CH <sub>3</sub> CH = NOH	(10.0) IP is onset of pho	(226) toelectron ba	(945) and.	-4.7±2	−20±8	69BEN/CRU	107-29-9
нсолнсн <sub>3</sub>	9.79 See also: 81KIM/I	(181) KAT.	(758)	-45±0.7	-187±3	*EST	123-39-7
С <sub>2</sub> H <sub>5</sub> NO <sub>2</sub> + NH <sub>2</sub> CH <sub>2</sub> COOH	8.8 See also: 83CAN/	109 HAM.	458	-93±1	-391±5	77NGA/SAB	56-40-6
C <sub>2</sub> H <sub>5</sub> NO <sub>2</sub>	10.88±0.05 See also: 81KIM/R	226.5 KAT.	947.5	-24.4±0.1	-102.2±0.6	77PED/RYL	79-24-3
C <sub>2</sub> H <sub>5</sub> ONO	(10.53±0.01)	(218)	(913)	-25	-103	74BAT/CHR	109-95-5
C <sub>2</sub> H <sub>5</sub> NO <sub>3</sub> + C <sub>2</sub> H <sub>5</sub> ONO <sub>2</sub>	(11.22)	(222)	(928)	-36.8±0.2	-154.1±1.0	77PED/RYL	625-58-1
C <sub>2</sub> H <sub>5</sub> NS <sup>+</sup> CH <sub>3</sub> CSNH <sub>2</sub>	8.33	194	814	2±0.2	10±1	82TOR/SAB2	62-55-5
C <sub>2</sub> H <sub>5</sub> N <sub>2</sub> + NCCH <sub>2</sub> NH <sub>3</sub>	From proton affin	194 aity of NCCH	812 I <sub>2</sub> NH <sub>2</sub> (RN 540	9-61-4). PA =	= 197.4 kcal/mo	l, 826 kJ/mol.	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f} H($	Ion)	$\Delta_{\rm f}H({ m Ne}$	utral)	Neutral	CAS registry
Neutral	eV	•	l kJ/mol	•	kJ/mol	reference	number
C <sub>2</sub> H <sub>5</sub> O <sup>+</sup>	· · · · · · · · · · · · · · · · · · ·				<del></del>		
Сн <sub>3</sub> снон	6.7	139	583	-16±1	-66±4	82MCM/GOL	17104-36-8
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from pr	oton affin	ity of acetaldeh	yde (RN 75-07	-0). PA = 180	5.6 kcal/mol,	
	781 kJ/mol. The I	P given is	$\Delta_{\mathbf{f}}H(\text{Ion}) - \Delta_{\mathbf{f}}H$	(Neutral). See	also: 82MAC	, 84LOS/HOL.	
CH₃OCH₂	6.94	(157)	(657)	-3±1	-13±4	82MCM/GOL	16520-04-0
		(165)	(690)				
	$\Delta_f H(Ion)$ at 0 K for See also: 84BOW,		arance potential	determination	1 (82MAC, 84)	BUT/HOL).	
CH <sub>2</sub> =CHOH <sub>2</sub>		148	619				
-	$\Delta_{\mathbf{f}}H( ext{Ion})$ from ap	pearance	potential deter	mination (82B)	UR/TER2).		
( \& \	77	165	691	D D 4 405	0.1. 1/1 50:		
( <u></u>	From proton affin	ity of oxir	ane (ICIN 75-21-	s). PA = 187.	9 Kcai/moi, 780	o kJ/mol.	
C <sub>2</sub> H <sub>5</sub> O <sub>2</sub> +							
CH <sub>3</sub> C(OH) <sub>2</sub>		72	302				
	From proton affin		='	1-19-7). See als	so: 84HOL/LC	OS. 85AUD/MIL.	
	PA = 190.2  kcal/r	noi, 796. k	J/mol.				
нс(он)осн <sub>3</sub>		92	386				
	From proton affin		OOCH <sub>3</sub> (RN 10	7-31-3). PA =	= 188.4 kcal/m	ol, 788. kJ/mol.	
<del> </del>	(86KNI/FRE, 84L	IA/LIE).					
C <sub>2</sub> H <sub>5</sub> P <sup>+</sup>							
u u							
n	(9.4±0.1)	(200)	(838)	-16±0.5	-69±2	*EST	6569-82-0
, H	(9.4±0.1)	(200)	(838)	-16±0.5	-69±2	*EST	6569-82-0
∠ <sup>P</sup>	(9.4±0.1)	(200)	(838)	−16±0.5	-69±2	•EST	6569-82-0
	(9.4±0.1)	(200)	(838)	-16±0.5	~69±2	•EST	6569-82-0
C <sub>2</sub> H <sub>5</sub> S <sup>+</sup>	(9.4±0.1)	197	(838)	-16±0.5	-69±2	•EST	6569-82-0 58794-14-2
	(9.4±0.1)			-16±0.5	~69±2	•EST	
C <sub>2</sub> H <sub>5</sub> S <sup>+</sup>	$(9.4\pm0.1)$ $\Delta_{ m f}H({ m Ion})$ from ap	197 200	823 <i>836</i>			•EST	
		197 200	823 <i>836</i>			*EST	
C <sub>2</sub> H <sub>5</sub> S + CH <sub>3</sub> CHSH		197 200 pearance (194)	823 <i>836</i> potential deterr (812)	ninations (83B	:UT/BAE).		58794-14-2
C <sub>2</sub> H <sub>5</sub> S + CH <sub>3</sub> CHSH	Δ <sub>f</sub> H(Ion) from ap	197 200 pearance (194) pearance	823 836 potential detern (812) potential detern	ninations (83B	:UT/BAE).		58794-14-2
C <sub>2</sub> H <sub>5</sub> S + CH <sub>3</sub> CHSH	Δ <sub>f</sub> H(Ion) from ap	197 200 pearance (194) pearance	823 836 potential detern (812) potential detern	ninations (83B ninations. See	UT/BAE). also: 83ERM,	'AKO. 0 K values.	58794-14-2

Table 1. Positive Ion Table - Continued

			e ion labi	e - Contin			
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>2</sub> H <sub>6</sub> + С <sub>2</sub> H <sub>6</sub>	11.52±0.01 See also: 81KIM	245.6 <i>249.3</i> /KAT, 84CH	1028 <i>1043</i> A/HIL.	-20.1±0.05 -16.4	5 -84.0±0.2 -68.4	77PED/RYL	74-84-0
C <sub>2</sub> H <sub>6</sub> BBr <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> BBr	10.25	192	804	-44	-185	82HOL/SMI	5158-50-9
C <sub>2</sub> H <sub>6</sub> BCl <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> BCl	(10.2) IP is onset of pho	(173) otoelectron b	(725) and.	-62	-259	82HOL/SMI	1803-36-7
C <sub>2</sub> H <sub>6</sub> BCl <sub>2</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NBCl <sub>2</sub>	9.56	125	521	-96±1	-401±4	77PED/RYL	1113-31-1
C <sub>2</sub> H <sub>6</sub> B <sub>4</sub> <sup>+</sup> H B H B H	(9.77)	(236.3)	(988.6)	11.0±2.9	45.9±12.1	85GAL/TAM	20693-67-8
C <sub>2</sub> H <sub>6</sub> Br <sup>+</sup> C <sub>2</sub> H <sub>5</sub> BrH	From proton affi	(180) nity of C <sub>2</sub> H <sub>5</sub> :	(753) Br (RN 74-96	-4). PA = ~17	i kcal/mol, ~7	15 kJ/mol.	
C <sub>2</sub> H <sub>6</sub> BrSi <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SiBr	$\Delta_{\mathrm{f}} H$ (Ion) from a	146 <i>151</i> ppearance po	612 633	nination (84SZ	E/BAE).		
C <sub>2</sub> H <sub>6</sub> Cd <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> Cd	(8.56±0.02)	(223)	(932)	25.3±0.3	105.8±1.3	77PED/RYL	506-82-1
C <sub>2</sub> H <sub>6</sub> Cl <sup>+</sup> C <sub>2</sub> H <sub>5</sub> ClH	From proton affin	170 nity of C <sub>2</sub> H <sub>5</sub> (	711 CI (RN 75-00-	3). PA = 169 k	cal/mol, 707 k	J/mol.	
CH <sub>3</sub> CICH <sub>3</sub>	Derived (85SHA/		(743)				24400-15-5
C <sub>2</sub> H <sub>6</sub> CIN <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NCI	8.75	(221)	(925)	19	81	*EST	1585-74-6
C <sub>2</sub> H <sub>6</sub> CIP + (CH <sub>3</sub> ) <sub>2</sub> PCI	(8.7) IP is onset of phot		(681) nd (82LEV/L		-158 N).	*EST	811-62-1
C <sub>2</sub> H <sub>6</sub> Cl <sub>2</sub> NOP <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NPOCl <sub>2</sub>	` (9.5) IP is onset of phot		(361) nd.	-133	-556	*EST	677-43-0

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	Ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry			
C <sub>2</sub> H <sub>6</sub> Cl <sub>2</sub> NP <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NPCl <sub>2</sub>	(8.9) IP is onset of pho	(171) toelectron	(716) band.	-34	-143	*EST	683-85-2			
C <sub>2</sub> H <sub>6</sub> Cl <sub>2</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SiCl <sub>2</sub>	(10.7) IP is onset of pho	(137) toelectron	(574) band.	-109	-458	81BEL/PER	75-78-5			
C <sub>2</sub> H <sub>6</sub> Cl <sub>2</sub> Sn <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SnCl <sub>2</sub>	(10.43)	(174)	(727)	-67	-279	*EST	753-73-1			
С <sub>2</sub> Н <sub>6</sub> F <sup>+</sup> Сн <sub>3</sub> FСн <sub>3</sub>	$\Delta_{\mathrm{f}} H$ (Ion) derived	(147) from resu	(614) lits of 86HOV/I	мсм.						
С <sub>2</sub> н <sub>5</sub> FН	From proton affin	138 ity of C <sub>2</sub> H	577 I <sub>S</sub> F (RN 75-02-	5). PA = 1651	kcal/mol, 690 k	J/mol.				
C <sub>2</sub> H <sub>6</sub> FN <sup>+</sup> CH <sub>2</sub> FCH <sub>2</sub> NH <sub>2</sub>	(9.1) IP from 79AUE/E	(155) BOW.	(650)	-55	-229	*EST	406-34-8			
C <sub>2</sub> H <sub>6</sub> FP <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> PF	(8.8) IP is onset of phot	(112)	(468) band.	-91	-381	*EST	507-15-3			
C <sub>2</sub> H <sub>6</sub> FSi <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SiF	From appearance	86 potential	359 (10.70±0.04 eV)	of ion in (CH	<sub>3</sub> ) <sub>3</sub> SiF.					
C <sub>2</sub> H <sub>6</sub> F <sub>2</sub> N <sup>+</sup> CF <sub>2</sub> HCH <sub>2</sub> NH <sub>3</sub>	From proton affin	269 ity of CF <sub>2</sub>	1124 HCH <sub>2</sub> NH <sub>2</sub> (RI	N 430-67-1). P	A = 207.5 kca	l/mol, 868 kJ/mol.	***************************************			
C <sub>2</sub> H <sub>6</sub> F <sub>2</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SiF <sub>2</sub>	11.03±0.03	42	177	-212	-887	77MUR/BEA	353-66-2			
С <sub>2</sub> Н <sub>6</sub> Нg <sup>+</sup> (СН <sub>3</sub> ) <sub>2</sub> Нg	(9.10±0.05)	(232) (237)	(972) (991)	22.5±0.2 27.0	94.0±1.0 113.3	77PED/RYL	593-74-8			
C <sub>2</sub> H <sub>6</sub> I <sup>+</sup> C <sub>2</sub> H <sub>5</sub> IH	From proton affin	(188) ity of C <sub>2</sub> H	(785) 1 <sub>5</sub> I (RN 75-03-6	). PA = ~176	kcal/mol, ~736	kJ/mol.				
C <sub>2</sub> H <sub>6</sub> N <sup>+</sup> CH <sub>2</sub> NHCH <sub>3</sub>	5.9 Δ <sub>f</sub> H(Ion) from ap (81GRI/LOS, 83B			30 nination(81LO	126 S/LAM); IP d	83BUR/CAS erived	31277-24-4			
CH <sub>3</sub> CHNH <sub>2</sub>	5.7 Δ <sub>f</sub> H(Ion) from ap	157 pearance j	657 potential deterr	26 mination(81LO	109 S/LAM); IP d	83BUR/CAS erived(83BUR/CAS	30208-36-7 ).			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potentia eV	l Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>2</sub> H <sub>6</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> N	(5.17) Δ <sub>f</sub> H(Ion) from	(154) appearance p	(644) otential meas	35±2 surement. IP ci	145±8 ted is ∆ <sub>f</sub> H(Ion	82MCM/GOL ) - Δ <sub>f</sub> H(Neutral).	15337-44-7
(N) H <sup>+</sup>	From proton af	180 finity of azirid	755 ine (RN 151-	56-4). PA = 21	15.7 kcal/mol, 9	02 kJ/mol.	
С <sub>2</sub> H <sub>6</sub> NO <sup>+</sup> СН <sub>3</sub> С(ОН)NH <sub>2</sub>	From proton af	103 finity of CH <sub>3</sub> 0	429 CONH <sub>2</sub> (RN	60-35-5). PA =	= 206.2 kcal/mo	ol, 863 kJ/mol.	
нс(он) NНСН <sub>3</sub>	From proton af	115 finity of HCO	481 NHCH <sub>3</sub> (RN	123-39-7). PA	= 205.8 kcal/n	noi, 861 kJ/mol.	
С <sub>2</sub> H <sub>6</sub> NO <sub>2</sub> + NH <sub>3</sub> CH <sub>2</sub> COOH	From proton af	61 Sinity of NH <sub>2</sub> C	254 CH <sub>2</sub> COOH (	RN 56-40-6). P.	A = 211.6 kcal	/mol, 885 kJ/mol.	
C <sub>2</sub> H <sub>5</sub> ONHO	From proton af	144 Finity of C <sub>2</sub> H <sub>5</sub>	602 ONO (RN 10	9-95-5). PA =	197.3 kcal/mo	l, 825.5 kJ/mol.	
C <sub>2</sub> H <sub>5</sub> NOOH	From proton aff	157 inity of C <sub>2</sub> H <sub>5</sub>	655 NO <sub>2</sub> (RN 79	-24-3). PA = 1	84.8 kcal/mol, 1	773 kJ/mol.	
$C_2H_6N_2^+$ (E)- $CH_3N = NCH_3$	8.45±0.05	231	964	36	149	82PAM/ROG	4143-41-3
C <sub>2</sub> H <sub>6</sub> N <sub>2</sub> O <sup>+</sup> (E)-CH <sub>3</sub> NN(O)CH <sub>3</sub>	(9.7) IP is onset of ph	(238) otoelectron b	(997) and.	15	61	*EST	54168-20-6
CH <sub>3</sub> NHCONH <sub>2</sub>	(≤9.66)	(≤164)	(≤688)	-58	-244	*EST	598-50-5
(CH <sub>3</sub> ) <sub>2</sub> NNO	8.69	200	835	-0.7±2	-3±8	67KOR/PEP	62-75-9
C <sub>2</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NNO <sub>2</sub>	(9.53)	(219)	(914)	-1±0.8	-5±3	77PED/RYL	4164-28-7
(E)-(CH <sub>3</sub> NO) <sub>2</sub>	(≤8.68)	(≤217)	(≤908)	17±0.2	71±1	73BAT/MIL	37765-15-4
С <sub>2</sub> H <sub>6</sub> O <sup>+</sup> С <sub>2</sub> H <sub>5</sub> OH	10.47±0.02  See also: 82MIS/ 81KIM/KAT, 80			-51.9	-234.8±0.2 -217.1 /MAC, 83OHN	77PED/RYL N/IMA,	64-17-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(Io	n)	∆ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry		
Neutral	eV	kcal/mol		kcal/mol		reference	number		
C <sub>2</sub> H <sub>6</sub> O +	<u></u>								
(CH <sub>3</sub> ) <sub>2</sub> O	10.025±0.025	187.2	783.3	-44.0±0.1	-184.0±0.5	77PED/RYL	115-10-6		
		191.5	801.0	-39.7	-166.3				
	IP from 84BUT/I	HOL. See als	o: 84BOW/M	IAC, 81KIM/K	AT, 80BAC/M	OU, 82BIE/ASB.			
С <sub>2</sub> Н <sub>4</sub> ОН <sub>2</sub>		175	732				60786-90-5		
· · · -	$\Delta_{\mathbf{f}}H$ (Ion) from a	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from appearance potential measurements (85BUR/HOL).							
	See also: 82HOL				ose the structu	re			
	С <sub>2</sub> Н <sub>3</sub> Н <sup>+</sup> ОН <sub>2</sub>	for the ion.	See also: 81T	TER/HEE.					
C <sub>2</sub> H <sub>6</sub> OS <sup>+</sup>									
(CH <sub>3</sub> ) <sub>2</sub> SO	(9.01)	(172)	(718)	-36.2±0.2	-151.3±0.8	77PED/RYL	67-68-5		
		(176)	(738)	-31.4	-131.5				
	See: 81KIM/KAT	3.							
C <sub>2</sub> H <sub>6</sub> O <sub>2</sub> +							· · · · · · · · · · · · · · · · · · ·		
носн <sub>2</sub> сн <sub>2</sub> он	10.16	142	593	-92.6±0.4	-387.6±1.7	77PED/RYL	107-21-1		
•	IP from 82HOL/	LOS2. See a	lso: 80VON/I	BIE, 81KIM/KA	AT.				
(CH <sub>3</sub> O) <sub>2</sub>	9.1	180	752	<b>-</b> 30 0+0 3	-125.7±1.3	77PED/RYL	690-02-8		
(61130)2	IP is onset of pho					//ILD/RIL	070-02-0		
7 H O C+	-								
C <sub>2</sub> H <sub>6</sub> O <sub>2</sub> S <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SO <sub>2</sub>	(10.3)	(148)	(621)	-89±0.7	-373±3	77PED/RYL	67-71-0		
(C113)23O2	(10.5)	(146) (154)	(644)	-84	-373±3 -350	//PED/KIL	07-71-0		
	IP is onset of pho	• •							
C <sub>2</sub> H <sub>6</sub> O <sub>3</sub> S <sup>+</sup>									
(CH <sub>3</sub> O) <sub>2</sub> SO	(9.9)	(113)	(472)	-115±0.5	-483±2	77PED/RYL	616-42-2		
V - 3 - 72	IP is onset of pho				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
7 II D+		·····							
C <sub>2</sub> H <sub>6</sub> P+									
H <sub>2</sub>		158	660						
/ <sup>P°</sup>	From proton affi	nity of phosp	hirane (RN 6	569-82-0). PA	= 191.4 kcal/n	nol, 801 kJ/mol.			
$\triangle$									
				· · · · · · · · · · · · · · · · · · ·					
C <sub>2</sub> H <sub>6</sub> S +	A - A						<b></b>		
C <sub>2</sub> H <sub>5</sub> SH	9.285±0.005	203	850	-11.1±0.1		77PED/RYL	75-08-1		
	See also: 830HN	<i>207</i> ЛМА. 81КІN	<i>867</i> MKAT.	-7.0	-29.5				
	500 200. 0501111	, 1,	-,						
(CH <sub>3</sub> ) <sub>2</sub> S	8.69±0.01	191	801	-9.0±0.1	-37.5±0.5	77PED/RYL	75-18-3		
	_	195	817	-5.1	-21.3				
	See also: 81KIM/	KAT.							
C <sub>2</sub> H <sub>6</sub> SSi <sup>+</sup>									
$C_2H_6SSi^+$ $(CH_3)_2Si=S$		(203)	(848)				1111-83-7		
<del>-</del> -	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from a	ppearance po	tential deteri	nination (81GL	JS/VOL).				

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_{\mathbf{f}}H$ (Ion)		Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry	
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>2</sub> H <sub>6</sub> S <sub>2</sub> +							
(CH <sub>3</sub> S) <sub>2</sub>	(7.4±0.3)	(165±4) <i>(169)</i>	(690±15) (707)	−5.8±0.2 −1.6	-24.2±1.0 -6.8	77PED/RYL	624-92-0
	Adiabatic ionizati	-					•
	rates; experiments because of change						
	(83BUT/BAE). S		_	upon ionizatioi	i irom 90 to 1	160 .	
C <sub>2</sub> H <sub>6</sub> S <sub>3</sub> +							
CH <sub>3</sub> SSSCH <sub>3</sub>	(8.73±0.03)	(199)	(831)	-3	-11	*EST	3658-80-8
C <sub>2</sub> H <sub>6</sub> Sc <sup>+</sup>							
C <sub>2</sub> H <sub>5</sub> ScH		(205)	(858)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from or	nset of endo	thermic reacti	on (84TOL/BE	EA).		
(CH <sub>3</sub> ) <sub>2</sub> Sc		189	791				
	$\Delta_{\mathbf{f}}H(Ion)$ from or	iset of endo	hermic reacti	on (84TOL/BE	(A). See also:	86ELK/ARI.	
C <sub>2</sub> H <sub>4</sub> ScH <sub>2</sub>		(218)	(912)				
	$\Delta_{\mathbf{f}}H$ (Ion) from or	iset of endo	hermic reacti	on (84TOL/BE	lA).		
C <sub>2</sub> H <sub>6</sub> Se <sup>+</sup>		,					
(CH <sub>3</sub> ) <sub>2</sub> Se	8.40±0.01 IP from 84BOC/A	(198) YG, 82LEV	(827) //LIA.	4	17	*EST	593-79-3
C <sub>2</sub> H <sub>6</sub> Se <sub>2</sub> +							
(CH <sub>3</sub> Se) <sub>2</sub>	(8.1)	(197)	(826)	11	44	*EST	7101-31-7
<b>,</b> -	IP is onset of phot	toelectron ba	and (84BOC/A	AYG).			
C <sub>2</sub> H <sub>6</sub> Si <sup>+</sup>					· ,		
CH <sub>2</sub> = CHSiH <sub>3</sub>	10.1	234	978	1±3	4±13	80TEL/RAB	7291-09-0
	IP is onset of phot	toelectron ba	and.				
C <sub>2</sub> H <sub>6</sub> Zn <sup>+</sup>							
(CH <sub>3</sub> ) <sub>2</sub> Zn	(9.00±0.02)	(220)	(919)	12.1±0.3	50.6±1.3	77PED/RYL	544-97-8
C <sub>2</sub> H <sub>7</sub> +		·					
C <sub>2</sub> H <sub>7</sub>		202	845				
	From proton affin PA = 143.6 kcal/n			See also: 85M	CM/KEB.		
	111 - 143.0 Real/II						
C <sub>2</sub> H <sub>7</sub> As +	(0.1)	(104)	(012)	7	21	*II.com	502 57 7
(CH <sub>3</sub> ) <sub>2</sub> AsH	(8.1) IP is onset of phot	(194) oelectron ba	(813) and (82ELB/D	7 PIE).	31	*EST	593-57-7
C <sub>2</sub> H <sub>7</sub> BO <sub>2</sub> +	·	<del></del>		<del></del>			
-4124							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>7</sub> B <sub>4</sub> +							
H-B-B-H C-B-H H-B-H H H-B-H H H-B-H H H-B-H H-B-H H H-B-H H H-B-H H H H	From proton affi PA = 207. kcal/r	-		an <b>c(6) (RN</b> 206	593-67-8).		
C <sub>2</sub> H <sub>7</sub> B <sub>5</sub> +							
H-C TB-C-H	10.54	240.5	1006.3	-2.5±2.6	~10.6±10.9	85GAL/TAM	20693-69-0
C <sub>2</sub> H <sub>7</sub> ClO <sup>+</sup>							
(CH <sub>3</sub> ) <sub>2</sub> OHC1	(10.4) IP is onset of pho	(167) otoelectron b	(698) and.	<del>-</del> 73	-305	82TN270	24521-77-5
C <sub>2</sub> H <sub>7</sub> FN <sup>+</sup>							
CH <sub>2</sub> FCH <sub>2</sub> NH <sub>3</sub>	From proton affi	99 nity of CH <sub>2</sub> F	413 CH <sub>2</sub> NH <sub>2</sub> (R	N 406-34-8). Pa	A = 212.3 kcal	/mol, 888 kJ/mol.	
C <sub>2</sub> H <sub>7</sub> Hg <sup>+</sup>							
(CH <sub>3</sub> ) <sub>2</sub> HgH	From proton affi	(202) nity of CH <sub>3</sub> F	(846) IgCH <sub>3</sub> (RN 5	93-74-8). PA =	= ~186 kcal/mc	ol, ~778 kJ/mol.	
C <sub>2</sub> H <sub>7</sub> N <sup>+</sup>						· · · · · · · · · · · · · · · · · · ·	
C <sub>2</sub> H <sub>5</sub> NH <sub>2</sub>	8.86±0.02 See also: 83OHN	193 V/IMA, 81KI	807 M/KAT.	-11.3±0.2	-47.5±0.7	77PED/RYL	75-04-7
(CH <sub>3</sub> ) <sub>2</sub> NH	8.23±0.08 See also: 81KIM/	185 /KAT.	<b>7</b> 76	-4.4±0.1	-18.5±0.4	77PED/RYL	124-40-3
C <sub>2</sub> H <sub>7</sub> NO <sup>+</sup>					······································		
NH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> OH	8.96 IP from 83KOP/I photoelectron ba			~48 reement with o	-202 nset of	77REI/PRA	141-43-5
СН <sub>3</sub> NНОСН <sub>3</sub>	8.92 IP from 83MOL/	(197) PIK.	(824)	-9	<b>-37</b>	*EST	1117-97-1
C <sub>2</sub> H <sub>7</sub> N <sub>2</sub> +							
CH <sub>3</sub> NNHCH <sub>3</sub>	From proton affi	194 nity of (E)-C	813 H <sub>3</sub> N=NCH <sub>3</sub>	, (RN 4143-41-3	s). PA = 206.9	9 kcal/mol, 866 kJ/m	oi.
C <sub>2</sub> H <sub>7</sub> O <sup>+</sup>						<u></u>	
C <sub>2</sub> H <sub>5</sub> OH <sub>2</sub>	From proton affi	121 nity of C <sub>2</sub> H <sub>5</sub>	507 OH (RN 64-1	7-5). PA = 18	8.3 kcal/mol, 7	88 kJ/mol.	
(CH <sub>3</sub> ) <sub>2</sub> OH	From proton affi 804 kJ/mol.	130 nity of (CH <sub>3</sub> )	542 ) <sub>2</sub> O (RN 115-	10-6). PA = 19	92.1 kcal/mol,		

Table 1. Positive Ion Table - Continued

ION	Toutestine assertion	A 77/7-		A TYNI-	1>	Nimma	CAS
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>2</sub> H <sub>7</sub> OS <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SOH	From proton affii	118 nity of (CH <sub>3</sub>	495 ) <sub>2</sub> SO (RN 67	'-68-5). PA = 2	211.3 kcal/mol	, 834 kJ/mol.	
С <sub>2</sub> H <sub>7</sub> O <sub>3</sub> P + (CH <sub>3</sub> O) <sub>2</sub> PHO	(10.53) IP from 80ZVE/\	(43) /IL.	(179)	(-200)	(-837)	*EST	868-85-9
С <sub>2</sub> H <sub>7</sub> P <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> PH	8.47±0.07 See also: 82COW	(181) /KEM.	(757)	-14	60	*EST	676-59-5
C <sub>2</sub> H <sub>7</sub> S + C <sub>2</sub> H <sub>5</sub> SH <sub>2</sub>	From proton affir	164 nity of C <sub>2</sub> H <sub>5</sub>	686 SH (RN 75-0	8-1). PA = 190	0.8 kcal/mol, 7	798 kJ/mol.	
(CH <sub>3</sub> ) <sub>2</sub> SH	From proton affir	156 nity of (CH <sub>3</sub>	653 ) <sub>2</sub> S (RN 75-1	8-3). PA = 200	).6 kcal/mol, 8	39 kJ/mol.	
C <sub>2</sub> H <sub>7</sub> S <sub>2</sub> + CH <sub>3</sub> SSHCH <sub>3</sub>	From proton affir	(164) nity of CH <sub>3</sub> S	(686) SCH <sub>3</sub> (RN 6	24-92-0). PA =	: ~196 kcal/m	ol, ~820 kJ/mol.	
C <sub>2</sub> H <sub>8</sub> B <sub>5</sub> <sup>+</sup>	From proton affir PA = 168. kcal/m	-	_	ornane(7) (RN 2	20693-69-0).		
C <sub>2</sub> H <sub>8</sub> N <sup>+</sup> C <sub>2</sub> H <sub>5</sub> NH <sub>3</sub>	From proton affir	137 hity of C <sub>2</sub> H <sub>5</sub>	574 NH <sub>2</sub> (RN 75	-04-7). PA = 2	17.0 kcal/mol,	908. kJ/mol.	
(CH <sub>3</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affin	141 hity of (CH <sub>3</sub> )	588 <sub>2</sub> NH (RN 12	4-40-3). PA =	220.6 kcal/mc	ol, 923. kJ/mol.	•
C <sub>2</sub> H <sub>8</sub> NO <sup>+</sup> H <sub>3</sub> N(CH <sub>2</sub> ) <sub>2</sub> OH	From proton affin	96 hity of NH <sub>2</sub> (	402 CH <sub>2</sub> ) <sub>2</sub> OH (F	N 141-43-5). P	A = 221.3 kc	al/mol, 926. kJ/mol.	gaaleen gaaraleet oo aa ah t
C <sub>2</sub> H <sub>8</sub> N <sub>2</sub> + H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(8.6) IP is onset of photo	(194) toelectron ba	(812) and (81KIM/	-4.3±0.5 KAT).	-17.8±2.1	77PED/RYL	107-15-3
(CH <sub>3</sub> ) <sub>2</sub> NNH <sub>2</sub>	7.28±0.04 IP from charge tra IP (C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> )	-				77PED/RYL standard:	57-14-7

Table 1. Positive Ion Table - Continued

	Table :	I. Positi	ve Ion Tabl	e - Contin	ued		·
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>2</sub> H <sub>8</sub> N <sub>2</sub> + C <sub>2</sub> H <sub>5</sub> NHNH <sub>2</sub>	A value of 8.12 eV Values of IP's of h significantly highe associated with ion	ydrazines r than the	determined by	threshold mea	surements ar	e usually	624-80-6
(CH <sub>3</sub> NH) <sub>2</sub>	Values of 7.75 and Reported values o significantly highe associated with ion	f IP's of hy	drazines deter adiabatic value	rmined by thres because of the	hold measure	ements are usually	540-73-8
C <sub>2</sub> H <sub>8</sub> P <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> PH <sub>2</sub>	From proton affin	134 ity of (CH	559 <sub>3</sub> ) <sub>2</sub> PH (RN 67	6-59-5). PA =	216.3 kcal/m	ol, 905 kJ/mol.	
C <sub>2</sub> H <sub>8</sub> Si <sup>+</sup> C <sub>2</sub> H <sub>5</sub> SiH <sub>3</sub>	(10.18±0.05)	(262)	(1095)	27±3	113±13	80TEL/RAB	2814-79-1
(CH <sub>3</sub> ) <sub>2</sub> SiH <sub>2</sub>	10.3	215	899	-23±1	-95±4	86DON/WAL	1111-74-6
C <sub>2</sub> H <sub>9</sub> N <sub>2</sub> + H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> NH <sub>3</sub>	From proton affin 945 kJ/mol.	135 ity of H <sub>2</sub> N	567 CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(RN 107-15-3)	. PA = 225.9	9 kcal/mol,	
(CH <sub>3</sub> ) <sub>2</sub> NHNH <sub>2</sub>	From proton affin 920 kJ/mol (84MA		694 <sub>3</sub> ) <sub>2</sub> NNH <sub>2</sub> (RN	157-14-7). PA	= 219.9 kcal/	mol,	
C <sub>2</sub> H <sub>10</sub> BN <sup>+</sup> ((CH <sub>3</sub> ) <sub>2</sub> NH)(BH <sub>3</sub> )	(9.39±0.01)	(202)	(847)	14±1	-59±4	80TEL/RAB	74-94-2
C <sub>2</sub> H <sub>12</sub> B <sub>10</sub> <sup>+</sup>	(10.19)	(191)	(800)	-44±2	-183±8	82PIL/SKI	16986-24-6
HB BH	(10.2) IP is onset of phot	(175) oelectron l	(733) band.	-60±2	-251±8	82PIL/SKI	20644-12-6
C <sub>2</sub> I <sub>2</sub> + IC=CI	(9.03)	(269.57)	(1127.90)	61.34	256.64	84DEW/HEA	624-74-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$	on)	∆ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>2</sub> La <sup>+</sup>							
LaC <sub>2</sub>	(5.4±0.3)	(266) <i>(266)</i>	(1113) <i>(1112)</i>	141±2 <i>141</i>	592±6 <i>591</i>	81GIN/PEL	12071-15-7
C <sub>2</sub> N <sup>+</sup>	<u></u>						
CCN	12.0 Δ <sub>f</sub> H(Ion) from a <sub>l</sub> IP cited is Δ <sub>f</sub> H(Io			133 prements (83SN	556 11,85HAR/M	85JANAF CI).	12327-12-7
CNC	$\Delta_{\mathrm{f}} H$ (Ion) from a	(387) ppearance p	(1620) otential measu	rements (85H	AR/MCI).		
C <sub>2</sub> N <sub>2</sub> +							
NCCN	13.37±0.01	381.6 <i>381.1</i>	1596.7 <i>1594.8</i>	73.3±0.2 <i>72.8</i>	306.7±0.7 <i>304.8</i>	77PED/RYL	460-19-5
	See also: 83SMI.					··	
C <sub>2</sub> N <sub>2</sub> O <sup>+</sup> NCNCO	(11.49±0.02)	(296)	(1238)	31	129	*EST	22430-66-6
C <sub>2</sub> N <sub>2</sub> S <sub>2</sub> + (SCN) <sub>2</sub>	(10.5) IP is onset of pho	(326) toelectron b	(1363) and.	84±1	350±6	77PED/RYL	505-14-6
C <sub>2</sub> Sc <sup>+</sup>							
C <sub>2</sub> Sc	7.7±0.2	325 <i>324</i>	1360 <i>1357</i>	147±3 <i>147</i>	617±12 <i>614</i>	81HAQ/GIN	12175-91-6
	See also: 81HAQ	GIN.					
C <sub>2</sub> Si <sup>+</sup>							
C <u>C</u> Si	(10.2±0.5)	(382) <i>(381)</i>	(1599) <i>(1594)</i>	147 146	615 <i>610</i>	82TN270	12071-27-1
C <sub>2</sub> Th +							
C <sub>2</sub> Th	(6.4±0.5)	(321)	(1341)	173	724	82TN270	12071-31-7
C <sub>2</sub> V <sup>+</sup> C <sub>2</sub> V	$\Delta_{\mathbf{f}} H$ (Ion) from or	<i>(335)</i> nset energy c	<i>(1401)</i> If endothermic	reaction (84A	RI/ARM, 85E	LK/ARM). 0 K valt	ıc.
C <sub>2</sub> Y <sup>+</sup>							
C <sub>2</sub> Y	6.7±0.3	297 296	1243 <i>1240</i>	143 <i>142</i>	597 <i>594</i>	82TN270	12071-35-1
C <sub>3</sub> +	`(12.1±0.3)	(479)	(2004)	200±4	837±17	83RAK/BOH	12075-35-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>3</sub> BrN <sup>+</sup> BrC≡CCN	(10.71±0.02) See also: 84KUH/	(350) MAI.	(1466)	103±5	433±20	79BUC/VOG	3114-46-3			
C <sub>3</sub> CIN <sup>+</sup> CIC=CCN	10.95±0.02	334	1396	81±5	339±20	79BUC/VOG	2003-31-8			
C3FN+ CF=CCN	(11.51±0.02)	(305)	(1278)	40±12	167±50	79BUC/VOG	32038-83-8			
C <sub>3</sub> F <sub>3</sub> N <sup>+</sup> CF <sub>2</sub> =CFCN	(10.6±0.1)	(139)	(584)	-105±0.7	-439±3	71JANAF	433-43-2			
C <sub>3</sub> F <sub>3</sub> N <sub>3</sub> +	(11.3) IP is onset of phot	(131) coelectron b	(548) and (81ASB/SVI	−129 3).	-542	*EST	675-14-9			
C <sub>3</sub> F <sub>4</sub> + CF <sub>2</sub> =C=CF <sub>2</sub>	(10.88)	(109)	(456)	-142	-594	86SMA	461-68-7			
$C_3F_6^+$ $CF_3CF=CF_2$	10.60±0.03 IP from 81BER/B	–24 OM.	-102	-269	-1125	75CHE/ROD	116-15-4			
$F_2 \stackrel{F_2}{ }_{F_2}$	11.18±0.03 IP from 81BER/B	24 OM.	101	-234	~978	81BOM/BER	931-91-9			
C <sub>3</sub> F <sub>6</sub> O + (CF <sub>3</sub> ) <sub>2</sub> CO	(11.44)	(-70)	(-293)	-334	-1397	72GOR	684-16-2			
C <sub>3</sub> F <sub>8</sub> + C <sub>3</sub> F <sub>8</sub>	13.38	-118	-492	-426±2	-1783±7	77PED/RYL	76-19-7			
C <sub>3</sub> F <sub>9</sub> N + (CF <sub>3</sub> ) <sub>3</sub> N	11.7 IP is onset of phot	(-168) coelectron b	(-703) and (82ELB/DIE	–438 E, 82BUR/P.	−1832 AW).	*EST	432-03-1			
C <sub>3</sub> H <sup>+</sup> HCCC	From proton affin	(381) ity of C <sub>3</sub> (R	(1593) N 12075-35-3). H	'A = ~185 l	ccal/mol, ~774 kJ	/mol.				
C <sub>3</sub> HF <sub>3</sub> + CF <sub>3</sub> C≖CH	(11.96±0.02) See also: 81BIE/A	(177) .SB.	(741)	-99	-413	86SMA	661-54-1			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> HF <sub>5</sub> N <sup>+</sup> C <sub>2</sub> F <sub>5</sub> CNH	From proton affi	-21 nity of C <sub>2</sub> F <sub>5</sub>	-86 CN (RN 422-	04-8). PA = 16	57.1 kcal/mol,	699 kJ/mol.	
С <sub>3</sub> НF <sub>6</sub> О <sup>+</sup> (СF <sub>3</sub> ) <sub>2</sub> СОН	Prom proton affi re-evaluated rela 628. kJ/mol.	_					
C <sub>3</sub> HF <sub>8</sub> N <sup>+</sup> (CF <sub>3</sub> ) <sub>2</sub> NCHF <sub>2</sub>	(11.7) IP from 82BUR/	(-110) PAW.	(~461)	-380	-1590	*EST	73563-15-2
C <sub>3</sub> HN <sup>+</sup> HC≡CCN	11.64±0.01	352	1474	84	351	85HAR	1070-71-9
C <sub>3</sub> HNO <sup>+</sup> NCCH=C=O	(≤10.07) IP from 81BOC/I	(≤256) HIR.	(≤1073)	24	101	*EST	
C <sub>3</sub> HO <sup>+</sup> HC=C-C=O	From appearance	232 potential de	971 eterminations	(83TER/HOL)	).		
C <sub>3</sub> H <sub>2</sub> + HC≡CCH	C <sub>3</sub> H <sup>+</sup> + H <sub>2</sub> →0	(330±3) C <sub>3</sub> H <sub>2</sub> + + H	(1381±12) is ~1 kcal/mo	ol endothermic.	(84SMI/AD	A).	2008-19-7
	From appearance	281±3 potentials in	1176±12 1 CH <sub>3</sub> CCX co	ompounds. (84F	łol/szu).		75123-91-0
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> + CF <sub>2</sub> = C = CH <sub>2</sub>	(9.79±0.03)	(178)	(743)	-48	-202	86SMA	430-64-8
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> O <sup>+</sup> (CHF <sub>2</sub> ) <sub>2</sub> CO	(10.7) IP is onset of pho	(15) toelectron ba	(61) and.	-232±4	-971±16	*EST	360-52-1
С <sub>3</sub> Н <sub>2</sub> F <sub>6</sub> O <sup>+</sup> сг <sub>3</sub> сн(он)сг <sub>3</sub>	11.94 IP from 83KOP/N		(-384)	−367±2	−1536±8	*EST	920-66-1
C <sub>3</sub> H <sub>2</sub> F <sub>7</sub> N <sup>+</sup> (CF <sub>2</sub> H) <sub>2</sub> NCF <sub>3</sub>	(11.4) IP from 82BUR/F		(-250)	-323	-1350	*EST	73551-02-7
C <sub>3</sub> H <sub>2</sub> N <sup>+</sup> HCCCNH	From proton affir PA = 180. kcal/m			9-71-9) (87DEA	/MAU, 85KN	II/FRE).	

Table 1. Positive Ion Table - Continued

Table 1. Fusitive for Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne- kcal/mol		Neutral reference	CAS registry number				
C <sub>3</sub> H <sub>2</sub> N <sub>2</sub> + CH <sub>2</sub> (CN) <sub>2</sub>	(12.70) IP from 83MOL/F	(356) PIK2.	(1491)	63.5±0.4	265.5±1.5	77PED/RYL	109-77-3				
C <sub>3</sub> H <sub>2</sub> N <sub>2</sub> O <sub>3</sub> +											
O ZHOO .	(10.67)	(134)	(559)	-112	<b>~470</b>	*EST	120-89-8				
С <sub>3</sub> H <sub>2</sub> O <sup>+</sup> нс∗ссно	(10.8) IP from 80VON/E	(276) BIE. See als	(1157) o: 79CAR/MOU	27	115	*EST	624-67-9				
CH <sub>2</sub> =C=C=O	9.12±0.05 IP from 83TER/H	(233) IOL. See als	(975) :o: 85MCN/SUF.	23	95	*EST	61244-93-7				
	(9.47)	(251)	(1052)	33±2	138±8	*EST	2961-80-0				
C <sub>3</sub> H <sub>2</sub> OS <sub>2</sub> +	(8.6) IP is onset of pho	(195) toelectron b	(815) and (83SCH/SCF	−3.6±1.2 ŧ).	-15.0±5.1	77PED/RYL	2314-40-1				
С <sub>3</sub> Н <sub>2</sub> О <sub>2</sub> + НС≡ССООН	(10.45) IP is onset of pho	(213) toelectron b	(891) and (80VON/BII	−28 3).	-117	*EST	471-25-0				
C <sub>3</sub> H <sub>2</sub> O <sub>3</sub> +	(9.8) IP is onset of pho	(126) toelectron b	(527) pand.	100±5	-419±21	77PED/RYL	872-36-6				
С <sub>3</sub> H <sub>2</sub> S <sub>3</sub> +	8.26	251	1050	60.5±2	253±7	77PED/RYL	930-35-8				

Table 1. Positive Ion Table - Continued

			e foil fable				
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>3</sub> <sup>+</sup> CH <sub>2</sub> C≡CH	8.68 $HCCCH^{+} + H_{2}$ derived from appo	arance pote	ential measurem				2932-78-7
	6.6 Heat of formation $\Delta_f H(\text{Ion}) - \Delta_f H(\text{Ion})$		1075 n appearance poi	105±4 tential meas	440±17 urements; IP give	82MCM/GOL en is	28933-84-8
C <sub>3</sub> H <sub>3</sub> Cl <sup>+</sup>							
CH <sub>2</sub> =C=CHCl	(9.57)	(263)	(1102)	43	179	*EST	3223-70-9
CH <sub>3</sub> C≡CCI	9.82	(276)	(1153)	49±4	206±15	*EST	7747-84-4
CH <sub>2</sub> ClC≢CH	10.68 See also: 81ZVE/I	(285) ERM, 82BII	(1192) E/ASB.	39	162	*EST	624-65-7
C3H3F3 + CF3CH = C12 CH2CHCF3	(put in clou	ble bond) (104)	) (438)	~147±2	−614±7	77PED/RYL	677-21-4 32718- <del>30-2</del>
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> O + CH <sub>3</sub> COCF <sub>3</sub>	10.67	(52)	(217)	-194	-812	*EST	421-50-1
С <sub>3</sub> H <sub>3</sub> F <sub>3</sub> O <sub>2</sub> + нсоосн <sub>2</sub> сF <sub>3</sub>	(11.31)	(5)	(18)	-256	-1073	*EST	32042-38-9
С <sub>3</sub> H <sub>3</sub> F <sub>4</sub> O <sup>+</sup> (СР <sub>2</sub> H) <sub>2</sub> СОН	From proton affin 711 kJ/mol.	-32 ity of CF <sub>2</sub> H	–134 COCF <sub>2</sub> H (RN 3	60-52-1). Pa	A = 170 kcal/mo	1,	
С <sub>3</sub> H <sub>3</sub> F <sub>5</sub> O <sup>+</sup> С <sub>2</sub> F <sub>5</sub> CH <sub>2</sub> OH	(11.2) IP is onset of phot	• •	(-229) and.	-313±0.7	−1310±3	77PED/RYL	422-05-9
C <sub>3</sub> H <sub>3</sub> F <sub>6</sub> N <sup>+</sup> (CF <sub>2</sub> H) <sub>3</sub> N	(11.2) IP from 82BUR/P		(-29)	-265	-1110	*EST	73551-03-8
С <sub>3</sub> H <sub>3</sub> F <sub>6</sub> O <sup>+</sup> (СР <sub>3</sub> ) <sub>2</sub> СНОН <sub>2</sub>	From proton affin	-180 ity of (CF <sub>3</sub> )	-755 <sub>2</sub> CHOH (RN 92	0-66-1). PA	= 165.0 kcal/mo	ı,	
C <sub>3</sub> H <sub>3</sub> N <sup>+</sup> CH <sub>2</sub> CHCN	10.91±0.01 See also: 84OHN/I	296 MAT, 81KII	1237 M/KAT.	44	184	82CHU/NGU	107-13-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>3</sub> H <sub>3</sub> NO <sup>+</sup> CH <sub>2</sub> =CHNCO	(9.3) IP is onset of pho	(208) toelectron	(872) a band.	-6	-25	•EST	3555-94-0
HC≊CCONH <sub>2</sub>	(9.85) IP is onset of photon	(244) toelectron	(1023) a band (81ASB)	17 SVE).	73	*EST	7341-96-0
N_O)	9.93±0.05 IP from 81BOU/F	248 HOP.	1037	19	79	78MCC/HAM	288-14-2
( <u>)</u>	(9.6)	(217)	(910)	-4±0.2	-16±1	78MCC/HAM	288-42-6
C <sub>3</sub> H <sub>3</sub> NS <sup>+</sup>		<del></del>		(kass sin	( pur on cun	્રેમ્ટિલા = લાજ	)
S N	(9.55)	(261)	(1090)	40	169	*EST	288-16-4
S N	(≤9.50)	(≤256)	(≤1070)	37±2	153±10	*EST	288-47-1
C <sub>3</sub> H <sub>3</sub> N <sub>2</sub> + NCCH <sub>2</sub> CNH	From proton affin 735 kJ/mol.	254 nity of CH	1061 <sub>2</sub> (CN) <sub>2</sub> (RN 10	9-77-3). PA =	175.6 kcal/mol,		
C <sub>3</sub> H <sub>3</sub> N <sub>3</sub> +							
	(9.3) IP is onset of photon	(314) toelectron	(1313) band (83GLE)	99 (SPA).	416	*EST	289-96-3
(N)	(9.2) IP is onset of phot	(292)	(1222) band.	80	334	*EST	290-38-0

Table 1	Positive	Ion Table	- Continue	Ы
I ame i.	FUSILIVE	min rame	- Continue	::::

			c Ion Table			<u> </u>	
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>3</sub> N <sub>3</sub> +							
	10.03±0.05 See also: 84SHA	285 /URA.	1194	54±0.2	226±1	82BYS	290-87-9
C <sub>3</sub> H <sub>3</sub> N <sub>3</sub> O <sub>2</sub> +							
H Z Z H	(10.59) IP from 81AJO/	(181) CAS2.	(756)	-64	-266	*EST	
H N H	10.18 IP from 81AJO/6	(181) CAS2, 77RO	(756) S/DRA.	<b>~</b> 54	-226	*EST	
C <sub>3</sub> H <sub>3</sub> O +							
CH <sub>2</sub> =CHCO	(7.0) IP is ∆ <sub>f</sub> H(Ion) -	(179) ∆ <sub>f</sub> H(Neutral	(751) i). Δ <sub>f</sub> H(Ion) f	17 rom appearance	72 potential de	82MCM/GOL termination.	72241-20-4
HC≖CCH <sub>2</sub> O	$\Delta_{ m f} H$ (Ion) from a	227 ppearance po	950 otential deteri	mination (84 <b>L</b> C	S/HOL).		92056-62-7
C <sub>3</sub> H <sub>4</sub> +							
$CH_2 = C = CH_2$	9.69±0.01	269 <i>271</i>	1126 <i>1134</i>	45.6±.2 47.7	190.6±1 199.5	77PED/RYL	463-49-0
	See also: 81KIM/	′КАТ, 84МО	M/BUR.				
CH <sub>3</sub> C≡CH	10.36±0.01	283.5 285.5	1186.2 <i>1194.5</i>	44.6±.5 46.6	186.6±2 195.1	77PED/RYL	74-99-7
	See also: 81KIM/	'КАТ, 84МО	M/BUR.				
$\triangle$	9.67±0.01	289	1210	66±0.7	277±3	77PED/RYL	2781-85-3
С <sub>3</sub> H <sub>4</sub> F <sub>3</sub> O <sup>+</sup> СН <sub>3</sub> С(ОН)СF <sub>3</sub>	From proton affi	-3	-11	21-50-1). PA =	174.2 kcal/m	ol. 729 kI/mol	
						,	
C <sub>3</sub> H <sub>4</sub> F <sub>3</sub> O <sub>2</sub> + HC(OH)CH <sub>2</sub> CF <sub>3</sub>	From proton affi	-70 nity of HCO	–294 OCH <sub>2</sub> CF <sub>3</sub> (R	N 32042-38-9).	PA = 179.4 l	kcal/mol,	

751 kJ/mol.

Table 1. Positive Ion Table - Continued

			e ion lable				
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>4</sub> F <sub>3</sub> O <sub>2</sub> + CF <sub>3</sub> C(OH)CH <sub>3</sub>	From proton aff 748 kJ/mol.	−55 inity of CF <sub>3</sub> C	-231 COOCH <sub>3</sub> (RN	431-47-0). PA	= 178.8 kca	l/mol,	
C <sub>3</sub> H <sub>4</sub> N <sup>+</sup> CH <sub>2</sub> CHCNH	(7.37) From proton aff IP cited is $\Delta_{\hat{\mathbf{f}}}H(1$			50±2 107-13-1). PA	209±10 = 189.7 kcal	82MCM/GOL /mol, 794. kJ/mol.	, 74738-52-6
C <sub>3</sub> H <sub>4</sub> NO <sup>+</sup> CH <sub>3</sub> COCNH	From proton aff 751. kJ/mol (86N		759 COCN (RN 63	1-57-2). PA =	179.5 kcal/m	ol,	
ON-H.	From proton aff 848 kJ/mol.	182 inity of 1800x8	761 azole (RN 288-	-14-2). PA = 2	:02.7 kcal/mo	· 	
Co.	From proton aff	154 inity of oxazo	643 le (RN 288-42	-6). PA = 208	.2 kcal/mol, 8	71 kJ/mol.	
С <sub>3</sub> Н <sub>4</sub> NO <sub>2</sub> <sup>+</sup> СН <sub>3</sub> СООСИН	From proton aff	138 inity of CH <sub>3</sub> C	576 DOCCN (86M.	AR/TOP). PA	= 179.5 kca	l/mol, 751. kJ/mol.	
$C_3H_4NS^+$	From proton aff		791 ole (RN 288-47	7-1). PA = 213	.2 kcal/mol, {	392 kJ/mol.	
C <sub>3</sub> H <sub>4</sub> N <sub>2</sub> +		· · · · · · · · · · · · · · · · · · ·		<del> </del>			<del></del>
1-2	9.25±0.01  IP from 86MAI/	258 <i>261</i> OLE.	1077 1093	44±0.5 48	185±2 201	80SAB	288-13-1
1-2 2	8.81±0.01 IP from 86MAI/	238 <i>242</i> OLE.	995 1011	35±0.5 38	145±2 <i>161</i>	80SAB	288-32-4

Table 1. Positive Ion Table - Continued

ION	Ionization potential	• •		Δ <sub>f</sub> H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
$C_3H_4N_3$ +							
N TANK	From proton affi 841 kJ/mol.	219 nity of 1,3,5-1	915 triazine (RN 2	90-87-9). PA	= 201.1 kcal/m	ol,	
C <sub>3</sub> H <sub>4</sub> O + CH <sub>3</sub> CH = C = O	8.95 IP from 81BOC/I	181 HIR.	759	-25	-105	80DEM/WUL	6004-44-0
сн <sub>2</sub> =снсно	10.103±0.006 See also: 80VON	215 /BIE, 81KIM	898 I/KAT, 78VA	-18 N/OSK.	<b>-77</b>	79VAJ/HAR	107-02-8
нс≡ссн <sub>2</sub> он	10.51 IP from 83KOP/N	(253) MOL, 80VO	(1060) N/BIE.	11	46	*EST	107-19-7
HC≡COCH <sub>3</sub>	9.48 IP from 86HOL/I	(236) LOS.	(989)	18	74	*EST	6443-91-0
	(9.1±0.1)	(214)	(894)	4	16	76ROD/CHA	5009-27-8
C <sub>3</sub> H <sub>4</sub> OS <sub>2</sub> +							
s	(9.2) IP is onset of pho	(182) stoelectron ba	(762) and.	-30±1	−126±5	77PED/RYL	2080-58-2
C <sub>3</sub> H <sub>4</sub> O <sub>2</sub> +							
CH <sub>2</sub> = CHCOOH	10.60 See also: 78VAN	167 /OSK.	699	<b>-77</b>	-324	80VIL/PER	79-10-7
сн₃сосно	9.60±0.06 See also: 81KIM/	156 KAT.	655	-65±1	-271±5	77PED/RYL	78-98-8
	(9.70±0.01)	(156)	(653)	−67.6±0.2	-282.9±0.8	77PED/RYL	57-57-8

Table 1. Positive Ion Table - Continued

	Taui	e 1. Posit	ive Ion Table	Continu	nea		
ION Neutral	Ionization potentia	•	Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>4</sub> O <sub>2</sub> S <sup>+</sup>				-, -, -, -, -, -, -, -, -, -, -, -, -, -	· · · · · · · · · · · · · · · · · · ·		
	(8.6) IP is onset of ph	(129) notoelectron	(538) band.	<b>-7</b> 0	-292	*EST	20628-59-5
C <sub>3</sub> H <sub>4</sub> O <sub>3</sub> +						<del></del>	
C°>	(10.4)	(117)	(491)	-122±1	-512±4	83CAL	96-49-1
сн <sub>3</sub> сосоон	9.9 IP is onset of ph	97 otoelectron	407 band.	-131	-548	83TER/WEZ	127-17-3
$C_3H_4S^+$ $CH_2=CHCH=S$	(8.3) IP from 82BOC	(223) /MOH.	(934)	32	133	*EST	53439-64-8
CH <sub>3</sub> SC≖CH	(8.3) IP is onset of ph	(247) otoelectron	(1036) band (81BOC/	56 RIE).	235	*EST	10152-75-7
C <sub>3</sub> H <sub>4</sub> S <sub>3</sub> +				<del></del>			<del></del>
S>=s	(8.40)	(216)	(904)	22.4±0.5	93.8±2.2	77PED/RYL	822-38-8
C <sub>3</sub> H <sub>5</sub> <sup>+</sup> CH <sub>2</sub> CH=CH <sub>2</sub>	8.13  ΔH <sub>f</sub> (Ion) from For IP determin recommends 43	ation, see al	so 83KAG/UJS	. For $\Delta_{\mathbf{f}}H(Neu$	tral), 81TSA	84HOL/LOS 82MAC). 9 kcal/mol, 167 kJ/mo	1981-80-2 ol.
CH₃CCH₂	$\Delta_f H$ (Ion) from	231 appearance	969 potential deter	ninations (83B)	UR/HOL).		?
(◯)H+	8.18±0.03 IP from 85DYK	255 /ELL.	1069	66.9	279.9	82MCM/GOL	2417-82-5
C <sub>3</sub> H <sub>5</sub> Br <sup>+</sup> CH <sub>3</sub> CH = CHBr	(9.30±0.05)	(224)	(938)	10±1	41±4	77PED/RYL	41407-21-0
$CH_2 = CHCH_2Br$	10.06 See also: 82BIE	243 'ASB.	1018	11.4±0.6	47.7±2.4	84TRA	106-95-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Iα		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry
C <sub>3</sub> H <sub>5</sub> BrO <sup>+</sup> CH <sub>3</sub> COCH <sub>2</sub> Br	(9.73)	(181)	(758)	-43±2	-181±8	77PED/RYL	598-31-2
	IP from 84OLI/C	GUE.					
C <sub>3</sub> H <sub>5</sub> Cl <sup>+</sup>							
CH <sub>2</sub> =CHCH <sub>2</sub> Cl	9.9 IP is onset of pho	227 otoelectron b	949 and (82BIE/	-1.3±0.6 ASB). See also:	-5.6±2.4 82LEV/LIA	84TRA ., 81ZVE/ERM.	107-05-1
C <sub>3</sub> H <sub>5</sub> CIN <sup>+</sup>				· · · · · · · · · · · · · · · · · · ·	·····		
CICH2CH2CNH	Promonoton offi	188	787	N 542 76 70 D	197 £ leae	al/al	
	From proton affi 784.5 kJ/mol.	nity of CICH	2CH2CN (R	N 342-70-7). P <i>t</i>	7 = 181"2 KC	ai/moi,	
C <sub>3</sub> H <sub>5</sub> ClO <sup>+</sup>							
CH <sub>3</sub> COCH <sub>2</sub> CI	9.91±0.03 See also: 84OLI/0	(175) GUE.	(731)	-54	-225	*EST	78-95 <i>-</i> 5
,Q	(10.2)	(209)	(876)	-26±1	-108±4	77PED/RYL	106-89-8
CH <sub>2</sub> CI	IP is onset of pho		and.				
•							
C <sub>3</sub> H <sub>5</sub> ClO <sub>2</sub> + ClH <sub>2</sub> CCOOCH <sub>3</sub>	(10.3)	(138)	(577)	-100	-417	*EST	96-34-4
	IP is onset of pho	toelectron b	and (85CAN/	'HAM). 			
$C_3H_5F^+$ $CH_2=CHCH_2F$	10.11	196	819	-37	-156	82DOL/MED	818-92-8
C <sub>3</sub> H <sub>5</sub> FO <sup>+</sup>		· · · · · · · · · · · · · · · · · · ·					
CH <sub>3</sub> COCH <sub>2</sub> F	(9.9) See also: 84OLI/0	(136) GUE.	(572)	-92	<b>~383</b>	*EST	430-51-3
C <sub>3</sub> H <sub>5</sub> F <sub>2</sub> O <sup>+</sup>							
(CFH <sub>2</sub> ) <sub>2</sub> COH	From proton affii 782 kJ/mol.	52 nity of CFH <sub>2</sub>	219 COCFH <sub>2</sub> (R	N 453-14-5). Pa	A = 187 kcal	/mol,	
C <sub>3</sub> H <sub>5</sub> F <sub>3</sub> O <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		
CF <sub>3</sub> CH <sub>2</sub> OCH <sub>3</sub>	10.53 IP from 83MOL/I	(35) PIK.	(147)	-208	<del>-</del> 869	*EST	460-43-5
C <sub>3</sub> H <sub>5</sub> I +		<u></u>					
CH <sub>2</sub> CHCH <sub>2</sub> I	9.298	238.2	996.6	23.8	99.5	84TRA	556-56-9
C <sub>3</sub> H <sub>5</sub> IO <sup>+</sup>							
CH <sub>3</sub> COCH <sub>2</sub> I	(9.3) IP is onset of pho	(183) toelectron ba	(767) and (840LI/0	-31±1 GUE).	-130±5	77PED/RYL	3019-04-3

Table 1. Positive Ion Table - Continued

	Table						
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		$\Delta_{\mathbf{f}}H$ (Nekcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>5</sub> N <sup>+</sup> C <sub>2</sub> H <sub>5</sub> CN	11.84±0.02 See also: 82CHE/	285 LAP, 81KIN	1194 4/KAT.	12.3±0.1	51.5±0.5	82CHU/NGU	107-12-0
C <sub>2</sub> H <sub>5</sub> NC	11.2±0.1 IP from 82CHE/L	292 .AP, <i>7</i> 7ROS	1222 /DRA.	33.8±1	141.4±4.2	77BAG/COL	624-79-3
(E)-CH <sub>2</sub> = CHCH = NH	(9.65) IP is onset of pho	(249) toelectron b	(1043) and (82SCH/SCI	27 H).	112	*EST	73311-40-7
H <sub>2</sub> CCH      H <sub>2</sub> CN	(9.30) IP from 83DAM/	(265) BOC.	(1108)	50	211	· •EST	6788-85-8
	(≤9.76±0.22)	(≤300)	(≤1256)	75	314	*EST	19540-05-7
C <sub>3</sub> H <sub>5</sub> NO <sup>+</sup> C <sub>2</sub> H <sub>5</sub> NCO	(10.1) IP is onset of pho	(196) toelectron b	(819) and.	~37	-155	*EST	109-90-0
NCCH <sub>2</sub> OCH <sub>3</sub>	10.75 IP from 83MOL/I	(240) PIK.	(1002)	8	-35	*EST	1738-36-9
CH <sub>2</sub> CHCONH <sub>2</sub>	9.5 IP is onset of pho	(172) toelectron b	(722) and (78VAN/OS	-47 SK).	-195	*EST	79-06-1
C <sub>3</sub> H <sub>5</sub> NOS <sup>+</sup>		<u></u>					
Ş NH	(9.2) IP is onset of pho	(177) toelectron b	(743) and (80AND/DI	-35 EV).	-145	*EST	2682-49-7
C <sub>3</sub> H <sub>5</sub> NO <sub>2</sub> +					· ·		
<b>€</b> NH	(9.6) IP is onset of pho	(139) toelectron b	(582) and (80AND/DI	-82 EV).	-344	*EST	497-25-6 <sub>.</sub>

## **GAS-PHASE ION AND NEUTRAL THERMOCHEMISTRY**

Table 1. Positive Ion Table - Continued

	Table	I. FUSI	tive Ion Table	= Contin	iueu		
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>3</sub> H <sub>5</sub> NSSe <sup>+</sup>							
HNS	7.3 IP is onset of pho	(155) toelectro	(650) n band (80AND)	–13 DEV).	-54	*EST	63369-86-8
C <sub>3</sub> H <sub>5</sub> NS <sub>2</sub> +		<del> </del>		<u></u>			
HNS	≤8.25 IP from 80AND/I	(≤161) DEV, 82L	(≤672) .EV/LIA.	-30	-124	*EST	96-53-7
C <sub>3</sub> H <sub>5</sub> N <sub>2</sub> +							
€NH.	From proton affin PA = 223.4 kcal/i			32-4) (86MAI	J/LIE, 84FLA/	MAQ, 86TAF/AN	v).
C. JAH	From proton affir PA = 212.8 kcal/r			3-1) (86MAU,	/LIE, 84FLA/N	ΛΑQ).	
C <sub>3</sub> H <sub>5</sub> O <sup>+</sup> C <sub>2</sub> H <sub>5</sub> CO	(5.7) $\Delta_f H$ (Ion) from agaffinity of CH <sub>3</sub> CF IP given is $\Delta_f H$ (Io	I = CO (F	N 6004-44-0). P				15843-24-0
сн <sub>2</sub> снснон	From proton affir	153 hity of CH	642 <sub>2</sub> = CHCHO (RI	N 107-02-8).  I	PA = 193.9 kca	ıl/mol, 811 kJ/mol.	
$C_3H_6^+$ $CH_3CH=CH_2$	9.73±0.02 See also: 81KIM/I	229 (AT.	959	4.8±0.2	20.2±0.4	77PED/RYL	115-07-1
$\triangle$	9.86 IP from 84LIA/BU	240 <i>244</i> UC. See a	1004 <i>1022</i> Iso: 81KIM/KAT	12.7±.2 16.9	53.3±0.5 70.9	77PED/RYL	75-19-4
C <sub>3</sub> H <sub>6</sub> Br <sub>2</sub> <sup>+</sup> CH <sub>2</sub> BrCHBrCH <sub>3</sub>	10.1 IP is onset of phot	216 oelectron	903 band (81KIM/K	−17±0.2 (AT).	-71±1	77PED/RYL	78-75-1
CH <sub>2</sub> BrCH <sub>2</sub> CH <sub>2</sub> Br	≤10.26	(≤220)	(≤919)	-17	-71	*EST	109-64-8

Table 1. Positive Ion Table - Continued

	Table .	I. Positi	ve Ion Tabl	e - Contin	uea —————		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>6</sub> Cl <sub>2</sub> + CH <sub>3</sub> CHCICH <sub>2</sub> CI	(10.87±0.05)	(212)	(886)	−38.9±0.3	-162.6±0.3	77PED/RYL	78-87-5
CH <sub>2</sub> CICH <sub>2</sub> CH <sub>2</sub> CI	10.85±0.05	212	887	-38±2	-160±8	77PED/RYL	142-28-9
С <sub>3</sub> H <sub>6</sub> FO <sup>+</sup> Сн <sub>3</sub> С(ОН)СН <sub>2</sub> F	From proton affin	82 hity of CH <sub>3</sub>	344 COCH <sub>2</sub> F (RN	N 430-51-3). PA	. = 192.0 kcal/s	mol,	
C <sub>3</sub> H <sub>6</sub> F <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> CF <sub>2</sub>	(11.42±0.02)	(138)	(578)	-125±3	-524±13	82DOL/MED	420-45-1
C <sub>3</sub> H <sub>6</sub> F <sub>3</sub> N <sup>+</sup> CF <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(9.3) IP from 79AUE/F	(40) BOW	(166)	-175	-731	*EST	460-39-9
CF <sub>3</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(9.2) IP from 79AUE/E	(25) BOW.	(104)	-187	<b>-78</b> 4	*EST	677-41-8
C <sub>3</sub> H <sub>6</sub> N + C <sub>2</sub> H <sub>5</sub> CNH	From proton affir	185 hity of C <sub>2</sub> H	775 5CN (RN 107	-12-0). PA = 1	92.6 kcal/mol, 8	306 kJ/mol.	
C <sub>2</sub> H <sub>5</sub> NCH	From proton affin	196 hity of C <sub>2</sub> H	819 5NC (RN 624	-79-3) (86MAU,	/KAR). PA =	203.7 kcal/mol,	
HCCCH <sub>2</sub> NH <sub>3</sub>	From proton affir 882 kJ/mol.	208 nity of HC≖	870 CCH <sub>2</sub> NH <sub>2</sub> (F	RN 2450-71-7). I	PA ≃ 210.8 kc	al/mol,	
(<\bar{\bar{\bar{\bar{\bar{\bar{\bar{	From proton affir PA = (212) kcal/s	-		outane (RN 195	40-05-7).		
C <sub>3</sub> H <sub>6</sub> N <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NC≡N	(9.0) IP is onset of pho	(241) toelectron	(1007) band.	33	139	*EST	1467-79-4
H <sub>3</sub> C N	(≤9.76)	(≤267)	(≤1118)	42	176	*EST	5161-49-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>6</sub> N <sub>2</sub> O +	(8.9) IP is onset of pho	(163) toelectron b	(683) and (80AND	–42 n/DEV).	-176	*EST	120-93-4
C <sub>3</sub> H <sub>6</sub> N <sub>2</sub> S +	8.15	210	880	22	94	*EST	96-45-7
C <sub>3</sub> H <sub>6</sub> N <sub>2</sub> Se <sup>+</sup>	(7.0) IP is onset of phot	(192) toelectron b	(803) and (80AND	31 //DEV).	128	*EST	33251-51-3
С <sub>3</sub> H <sub>6</sub> O <sup>+</sup> С <sub>2</sub> H <sub>5</sub> CHO	9.953±0.005 See also: 81ELS/A	184.7 ALL, 85TR	772.9 A, 81KIM/KA		-187.4±1.5	77PED/RYL	123-38-6
(CH <sub>3</sub> ) <sub>2</sub> CO	9.705 See also: 72POT/S	171.9 SOR, 81KIM	719.2 I/KAT, 77ST		~217.2±0.4	76CHA/ZWO	67-64-1
CH <sub>2</sub> = CHCH <sub>2</sub> OH	9.67±0.05 See also: 83BOM/	193 DAN, 82H0	809 OL/BUR.	-30±0.5	-124±2	77PED/RYL	107-18-6
(E)-CH <sub>3</sub> CH = CHOH	$8.64\pm0.02$ $\Delta_f H$ (Ion) from ap IP from 84TUR2.					84TUR2 HOL/BUR).	57642-95-2
(Z)-CH <sub>3</sub> CH = CHOH	8.70±0.03 $\Delta_f H$ (Ion) from ap IP from 84TUR2.					84TUR2 HOL/BUR)	57642-96-3
CH <sub>2</sub> = C(OH)CH <sub>3</sub>	8.67±0.05 Δ <sub>f</sub> H(Ion) from ap (See also: 82LIF2)				-176 DL/LOS3.	84TUR/HAN	29456-04-0 94324-85-9-
$CH_2 = CHOCH_3$	(8.93±0.02)	(182)	(762)	-24±2	-100±7	*EST	107-25-5
	9.668±0.005 See also: 79AUE/I	203.7 BOW.	852.3	-19.2±0.1	-80.5±0.6	77PED/RYL	503-30-0

Table 1. Positive Ion Table - Continued

	Table :	1. Positive Ion Tabl	e - Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>3</sub> H <sub>6</sub> O +	10.22±0.02 See also: 81KIM/I	213 891 KAT, 79AUE/BOW.	-22.6±0.1	−94.7±0.6	77PED/RYL	75-56-9
ОН	(9.10) IP from 83BOM/I	(188) (785) DAN. See also: 82HOL/E	–22 SUR.	-93	*EST	16545-68-9
C <sub>3</sub> H <sub>6</sub> OS + CH <sub>3</sub> C(=O)SCH <sub>3</sub>	(9.5) IP is onset of phot	(182) (761) toelectron band.	-37	-156	,*EST	1534-08-3
\$ 10	(8.1) IP is onset of phot	(231) (966) toelectron band (83JOR/	44 CAR).	184	*EST	5684-29-7
<u></u> 5=0	(8.5) IP is onset of phot	(184) (769) toelectron band (83JOR/	–12 CAR).	-51	*EST	13153-11-2
он	(8.3) IP is onset of phot	(137) (572) toelectron band (83JOR/	-55 CAR).	-229	*EST	50879-06-6
С <sub>3</sub> H <sub>6</sub> O <sub>2</sub> + С <sub>2</sub> H <sub>5</sub> COOH	10.525±0.003 See also: 81HOL/	136 567 FIN, 81KIM/KAT.	-107±0.5	-448±2	77PED/RYL	79-09-4
HCOOC <sub>2</sub> H <sub>5</sub>	10.61±0.01	(153) (637)	-92	-387	*EST	109-94-4
CH3COOCH3	10.27±0.02 See also: 85CAN/I	139 581 HAM.	-98.0±0.2	~410.0±0.8	77PED/RYL	79-20-9
$CH_2 = C(OH)OCH_3$	From appearance	114 477 potential determination.				4453-91-2
$CH_3CH = C(OH)_2$	From appearance	104 437 potential determinations				
CH <sub>3</sub> C(OH)OCH <sub>2</sub>	Estimated in 86BI	(127) (533) UR/HOL.	0, 0 - 1	* ·	.4.	

Table 1. Positive Ion Table - Continu	ned	mtir	Con	-	Table	Inn	ive	Posi	e 1.	Tabl
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ION Neutral	Ionization potential eV	•	on) kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>6</sub> O <sub>2</sub> +							
<b>○</b> - <b>○</b>	(≤9.86)	(≤203)	(≤847)	-25	-104	*EST	4362-13-4
$\bigcirc$	(9.9) IP is onset of ph	(157) otoelectron l	(658) band.	−71.1±0.1	-297.5±0.6	77PED/RYL	646-06-0
C <sub>3</sub> H <sub>6</sub> O <sub>2</sub> S <sup>+</sup>				<u> </u>		<u> </u>	
(CH <sub>3</sub> O) <sub>2</sub> CS	(8.7) IP is onset of pho	(121) otoelectron l	(504) band.	-80	-335	*EST	1115-13-5
C <sub>3</sub> H <sub>6</sub> O <sub>3</sub> +		<del></del>					
СН3ОСООСН3	(10.5) IP is onset of pho	(103) otoelectron t	(432) band.	-139	-581	*EST	616-38-6
	(10.3) IP is onset of pho	(126) otoelectron t	(528) band.	−111.4±0.1	-465.9±0.3	77PED/RYL	110-88-3
C <sub>3</sub> H <sub>6</sub> O <sub>3</sub> P <sup>+</sup>		······································					
O PH	From proton affi PA = 194.0 kcal	-		ohabicyclo[2.2.1	]heptane (RN 2	279-53-8).	
C <sub>3</sub> H <sub>6</sub> S <sup>+</sup>							
(CH <sub>3</sub> ) <sub>2</sub> CS	≤8.60±0.05	≤196	≤821	-2	-9	79JOS	4756-05-2
CH <sub>2</sub> = CHCH <sub>2</sub> SH	9.25	(228)	(956)	15±2	64±9	•EST	870-23-5
CH <sub>2</sub> =CHSCH <sub>3</sub>	8.2 IP is onset of pho	(207) otoelectron b	(865) pand.	18±0.2	74±1	*EST	1822-74-8
< <sup>s</sup> >	8.69	214.9 <i>219.5</i>	899.1 <i>918.4</i>	14.5 19.1	60.7 <i>79.9</i>	77PED/RYL	287-27-4
$\checkmark$	Results from 83E						

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Net		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>6</sub> S <sup>+</sup>							
S сн <sub>3</sub>	8.7 IP is onset of pho	212 toelectron b	885 and. See also: <i>794</i>	11±0.5 AUE/BOW	46±2	77PED/RYL	1072-43-1
C <sub>3</sub> H <sub>6</sub> S <sub>2</sub> + CH <sub>3</sub> CSSCH <sub>3</sub>	(8.1) IP is onset of pho	(211) toelectron b	(882) and.	24±3	100±13	*EST	2168-84-5
5-s	(7.6) IP is onset of pho	(170) toelectron b	(712) and (80BOC/STE	-5 3).	-21	*EST	557-22-2
55	8.6 IP is onset of pho	(201) toelectron b	(840) and.	2	10	*EST	4829-04-3
C <sub>3</sub> H <sub>6</sub> S <sub>3</sub> + (CH <sub>3</sub> S) <sub>2</sub> CS	(7.9) IP is onset of pho	(203) toelectron b	(851) and.	21	89	*EST	2314-48-9
s s	(7.7) IP is onset of pho	(190) toelectron b	(797) and. (81BOC/SC	13 H).	54	•EST	291-21-4
C <sub>3</sub> H <sub>7</sub> <sup>+</sup>							
n-C <sub>3</sub> H <sub>7</sub>	8.09±0.01  IP from 85DYK/F D[C-H] = 100.51		881 <i>896</i> o: 84SCH/HOU.	24.0±0.5 <i>27</i> Δ <sub>f</sub> H(Neutr	100.5±2.1 <i>115</i> al) based on	85TSA	2143-61-5
iso-C <sub>3</sub> H <sub>7</sub>	$7.36\pm0.02$ Heat of formation (80BAE, 82ROS/ $\Delta_f H$ (Neutral) bas 751. kJ/mol.	BUF, 81TR	A/MCL). IP from	a 85DYK/E	LL. See also: 83		19252-53-0
(△)H+	From proton affir	198.5 nity of c-C <sub>3</sub> F	831 I <sub>6</sub> . (RN 75-19-4).	PA = 179.	8 kcal/mol, 752 k	J/mol.	

Table 1. Positive Ion Table - Continued

		Yaninating managing A regard					
ION Neutral	Ionization potentia eV	ıl Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>7</sub> Br <sup>+</sup>							
n-C <sub>3</sub> H <sub>7</sub> Br	10.18±0.01	214 <i>221</i>	898 <i>926</i>	-20.2±0.1 -13	-84.5±0.5 -56	77PED/RYL	106-94-5
	See also: 81KIM	I/KAT.					
iso-C <sub>3</sub> H <sub>7</sub> Br	10.07±0.01	209 <i>215</i>	873 <i>901</i>	-23.4±0.2 -17	-98.3±0.9 - <i>70</i>	80TRA	75-26-3
	See also: 81KIN						
C <sub>3</sub> H <sub>7</sub> Cl <sup>+</sup>					*		
n-C <sub>3</sub> H <sub>7</sub> Cl	10.82±0.03 See also: 81KIM	218 I/KAT.	911	-31.6±0.1	-132.4±0.6	77PED/RYL	540-54-5
iso-C <sub>3</sub> H <sub>7</sub> Cl	10.78±0.02 See also: 81KIM	214 1/KAT.	895	-34.6±0.1	-145.0±0.6	80TRA	75-29-6
C <sub>3</sub> H <sub>7</sub> ClHg <sup>+</sup>							
n-C <sub>3</sub> H <sub>7</sub> HgCl	≤10.15 IP from 81BAI/	≤213 CHI2.	≤891	−21±2	-88±8	80TEL/RAB	2440-40-6
iso-C <sub>3</sub> H <sub>7</sub> HgCl	≤9.80 IP from 81BAI/	≤206 CHI2.	≤863	-20±2	-83±8	80TEL/RAB	30615-19-1
C <sub>3</sub> H <sub>7</sub> CIO <sup>+</sup>							
CICH <sub>2</sub> OC <sub>2</sub> H <sub>5</sub>	10.30 IP from 83MOL	(184) ./PIK.	(771)	<b>-</b> 53	-223	*EST	3188-13-4
C <sub>3</sub> H <sub>7</sub> F <sup>+</sup>							***
n-C <sub>3</sub> H <sub>7</sub> F	(11.3) IP is onset of ph	(192) otoelectron ba	(804) and.	-68±0.5	-286±2	77PED/RYL	460-13-9
iso-C <sub>3</sub> H <sub>7</sub> F	(11.08±0.02)	(185)	(776)	-70±0.5	-293±2	77PED/RYL	420-26-8
C <sub>3</sub> H <sub>7</sub> F <sub>3</sub> N <sup>+</sup> CF <sub>3</sub> NH(CH <sub>3</sub> ) <sub>2</sub>	From proton aff 811 kJ/moj.	–15 inity of CF <sub>3</sub> N	-65 (CH <sub>3</sub> ) <sub>2</sub> (RN	677-41-8). PA	= 193.8 kcal/m	ol,	
CF <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> NH <sub>3</sub>	From proton aff 881 kJ/mol.	–20 inity of CF <sub>3</sub> C	-82 H <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub> (	(RN 460-39-9).	PA = 210.6 kc	al/mol,	
CF <sub>3</sub> CH <sub>2</sub> NH <sub>2</sub> CH <sub>3</sub>	From proton aff 878 kJ/mol.	−11 inity of CF <sub>3</sub> Cl	–47 H <sub>2</sub> NHCH <sub>3</sub> (I	RN 2730-67-8).	PA = 209.8 kc	al/mol,	
C <sub>3</sub> H <sub>7</sub> I +							
n-C <sub>3</sub> H <sub>7</sub> I	9,269 See: 82ROS/BU	206 <i>211</i> F. 83BRA/BA	862 <i>884</i> E2. 81KIM/K	-2.4±0.5	−32.5±1.7 −10.2±2	77PED/RYL	107-08-4

Table 1. Positive Ion Table - Continued

	Table	L. Positiv	e Ion Table -	Contin	lea		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>7</sub> I <sup>+</sup> iso-C <sub>3</sub> H <sub>7</sub> I	9.175 See: 82ROS/BUF,	202 <i>207</i> 83BRA/B	844 <i>865</i> AE2, 81KIM/KAT	-9.9±0.4 -4.8±0.5	-41.6±1.7 -20.1±2	77PED/RYL	75-30-9
							· · · · · · · · · · · · · · · · · · ·
$C_3H_7N^+$ $CH_2 = CHCH_2NH_2$	8.76 See also: 79AUE/I	(213) BOW.	(893)	11	48	*EST	107-11-9
NH	(8.3) IP from 79AUE/B	(215) OW.	(898)	24±1	99±4	•EST	503-29-7
CH3	(8.7) IP from 79AUE/B	(230) OW. See a	(964) lso: 86CAU/DIV.	30±0.5	127±2	*EST	1072-44-2
CH <sub>3</sub>	(9.0) IP from 79AUE/B	(230) SOW.	(961)	22±1	91±6	*EST	75-55-8
NH <sub>2</sub>	(8.7) IP is onset of phot	(219) coelectron t	(916) pand (81KIM/KA)	18.4±0.1 Г). See also	77.0±0.6 : 79AUE/BOW.	77PED/RYL	765-30-0
C-H-NO+				· · · · · · · · · · · · · · · · · · ·			<u></u>
C <sub>3</sub> H <sub>7</sub> NO <sup>+</sup> HCON(CH <sub>3</sub> ) <sub>2</sub>	9.13±0.02 See also: 82BIE/A	165 .SB, 81HE	689 N/ISA.	-45.8±0.4	-191.7±1.7	77PED/RYL	68-12-2
$(CH_3)_2C=NOH$	(9.1) IP is onset of phot	(195) coelectron l	(815) pand.	-15±3	-63±12	*EST	127-06-0
CH₃CONHCH₃	9.3 IP is onset of phot	158 toelectron l	661 band.	-56	-236	*EST	79-16-3
C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub> +							
n-C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub>	10.81±0.03 See also: 81KIM/F	220 KAT.	919	-29.7±0.1	-124.0±0.6	77PED/RYL	108-03-2
i-C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub>	10.71±0.05 See also: 81KIM/k	214 KAT.	894	-33.2±0.2	-139.0±0.9	77PED/RYL	79-46-9
n-C <sub>3</sub> H <sub>7</sub> ONO	(10.34±0.01)	(210)	(879)	~28±1	-119±4	74BAT/CHR	543-67-9

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Table 1. Positive Ion Table - Continued

	Table.		e ion Table .	Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub> + i-C <sub>3</sub> H <sub>7</sub> ONO	(10.23±0.01)	(204)	(854)	-32±1	-133±4	74BAT/CHR	541-42-4
H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> COOH	(8.8) IP is onset of phot	(101) oelectron b	(425) and (83CAN/HA	-101±0.5 M).	-424±2	83SKO/SAB	28854-76-4
СН <sub>3</sub> NHСН <sub>2</sub> СООН	(8.4) IP is onset of phot	(106) oelectron b	(443) and (83CAN/HA	-88±0.2 .M).	-367±1	78SAB/LAF	107-97-1
L-CH <sub>3</sub> CH(NH <sub>2</sub> )COOH	8.88 See also: 83CAN/I	106 HAM.	442	-99±1	-415±4	77NGA/SAB	56-41-7
NH <sub>2</sub> COOC <sub>2</sub> H <sub>5</sub>	(10.15) IP is onset of phot	(127) oelectron b	(533) and.	-107	-446	75BER/BOU	51-79-6
NH <sub>2</sub> CH <sub>2</sub> COOCH <sub>3</sub>	(9.1) IP is onset of phot	(121) ocicctron b	(505) and (83CAN/HA	-89 M).	-373	*EST	616-34-2
C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub> S <sup>+</sup> L-HSCH <sub>2</sub> CH(NH <sub>2</sub> )COOH	(9.5) IP from 83CAN/H	(128) AM.	(534)	-92	-383	*EST	3374-22-9
C <sub>3</sub> H <sub>7</sub> NO <sub>3</sub> + n-C <sub>3</sub> H <sub>7</sub> ONO <sub>2</sub>	(11.07±0.02)	(214)	(894)	-41.6±0.3	-173.9±1.3	77PED/RYL	627-13-4
L-НОСН <sub>2</sub> СН(NH <sub>2</sub> )СООН	(8.7) IP is onset of phot	(67) oelectron b	(278) and(83CAN/HA)	−134 M).	-561	*EST	302-84-1
C II NO+							<del></del> .
C <sub>3</sub> H <sub>7</sub> NS <sup>+</sup> HCSN(CH <sub>3</sub> ) <sub>2</sub>	(≤8.2) IP from 81HEN/IS	(≤201) SA.	(≤840)	12	49	*EST	758-16-7
C <sub>3</sub> H <sub>7</sub> N <sub>2</sub> + H <sub>3</sub> N(CH <sub>2</sub> ) <sub>2</sub> CN	From proton affin	180 ity of H <sub>2</sub> N(	755 CH <sub>2</sub> ) <sub>2</sub> CN (RN 1:	51-18-8). Pa	A = 207.0 kcal/mo	ol,	
CH3NH2CH2CN	From proton affini 862. kJ/mol.	185 ity of CH <sub>3</sub> N	775 IHCH <sub>2</sub> CN (RN 5	616-32-0). I	PA = 206.0 kcal/r	nol,	
(CH <sub>3</sub> ) <sub>2</sub> NCNH	From proton affini 858 kJ/mol.	194 ity of (CH <sub>3</sub> )	811 <sub>2</sub> NCN (RN 1467	-79-4) (86M	(AR/TOP). PA =	= 205.0 kcal/mol,	
C <sub>3</sub> H <sub>7</sub> O <sup>+</sup>		·					
n-C <sub>3</sub> H <sub>7</sub> O	(9.20±0.05)	(202)	(847)	-10	<b>-41</b>	82MCM/GOL	16499-18-6
i-C <sub>3</sub> H <sub>7</sub> O	(9.20±0.05)	(197)	(825)	-15	-63	82MCM/GOL	3958-66-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>3</sub> H <sub>7</sub> O +		101	550				
C <sub>2</sub> H <sub>5</sub> CHOH	From proton affir	131	550 CHO (PN 12	226) PA	190 6 keal/me	1 703 kT/mot	
	C <sub>3</sub> H <sub>7</sub> O + formed						
	same species. See	• .					
(CH <sub>3</sub> ) <sub>2</sub> COH		117	490				
	From proton affir See also: 84LOS/		) <sub>2</sub> CO (RN 67-	64-1). PA = 1	96.7 kcal/mol	l, 823 kJ/mol.	
$C_2H_5OCH_2$		(142)	(593)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from a	ppearance po	otential deterr	nination. See a	iso: 82MAC.		
CH <sub>3</sub> CHOCH <sub>3</sub>		134	562				
	From proton affir See also: 82MAC	-	= CHOCH <sub>3</sub> (I	N 107-25-5). P	$^{\circ}A = 207.4 \text{ kg}$	cal/mol, 868 kJ/mol.	
/ <del></del> 0\		140	625				
(L) H <sup>+</sup>	From proton affin	149 nity of oxetar	625 ne (RN 503-30	-0). PA = 196	.9 kcal/mol, 8	324 kJ/mol.	
CH3 H+	From proton affir	148 nity of methy	620 loxirane (RN	75-56-9). PA =	= 194.7 kcal/r	nol, 815 kJ/mol.	
C <sub>3</sub> H <sub>7</sub> OS <sup>+</sup>							
CH <sub>3</sub> C(SH)OCH <sub>3</sub>		125	522				
	From proton affir $PA = 203.7 \text{ kcal/s}$		•	RN 21119-13-1	) (83CAS/KI	M).	
CH <sub>3</sub> C(OH)SCH <sub>3</sub>		106	443				
	From proton affir $PA = 199.7 \text{ kcal/s}$	_	_	RN 1534-08-3)	(83CAS/KIN	<b>Л</b> ).	
C <sub>3</sub> H <sub>7</sub> O <sub>2</sub> +							
C <sub>2</sub> H <sub>5</sub> C(OH) <sub>2</sub>		67	280				
	From proton affir	nity of C <sub>2</sub> H <sub>5</sub>	COOH (RN 7	9-09-4). PA =	191.8 kcal/m	ol, 802 kJ/mol.	
HC(OH)OC <sub>2</sub> H <sub>5</sub>		80	335				
	From proton affir	nity of HCO	OC <sub>2</sub> H <sub>5</sub> (RN 1	09-94-4). PA =	= 193.1 kcal/r	mol, 808 kJ/mol.	
CH <sub>3</sub> C(OH)OCH <sub>3</sub>		69	288				
	From proton affir	nity of CH <sub>3</sub> C	OOCH <sub>3</sub> (RN	79-20-9). PA	= 197.8 kcal/	mol, 828. kJ/mol.	
CH(OCH <sub>3</sub> ) <sub>2</sub>		97	406				4483-45-8
	From appearance	potential de	termination (	32HOL/LOS2)			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) I kJ/moi	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number					
С <sub>3</sub> H <sub>7</sub> O <sub>3</sub> <sup>+</sup> Сн <sub>3</sub> OC(ОН)ОСН <sub>3</sub>	Prom proton affin 838. kJ/mol.	27 111  From proton affinity of CH <sub>3</sub> OCOOCH <sub>3</sub> (RN 616-38-6). PA = 200.2 kcal/mol, 838. kJ/mol.										
C <sub>3</sub> H <sub>7</sub> O <sub>3</sub> P <sup>+</sup>												
0 P-OCH <sub>3</sub>	(9.06±0.1) See also: 82WOR,	(45) HAR.	(186)	-164	688	*EST	3741-36-4					
С <sub>3</sub> H <sub>7</sub> S <sup>+</sup>					·							
( H+	From proton affin (842) kJ/mol.	(179) ity of thie	(749) tane (RN 287-2	7-4). PA = (20	01.3) kcal/mol,							
( S CH <sub>3</sub> ) H	+ From proton affin (839) kJ/mol.	(176) ity of 2-mo	(737) ethylthiirane (R	N 1072-43-1).	PA = (200.6)	kcal/mol,						
C <sub>3</sub> H <sub>7</sub> S <sub>2</sub> + CH <sub>3</sub> C(SH)SCH <sub>3</sub>	From proton affin 867. kJ/mol.	182 ity of CH <sub>3</sub>	763 <sub>5</sub> C(=S)SCH <sub>3</sub> (	RN 2168-84-5).	. PA = 207.3 k	ccal/mol,						
C <sub>3</sub> H <sub>8</sub> + C <sub>3</sub> H <sub>8</sub>	10.95±0.05 See also: 81KIM/k	227.5 (AT.	951.5	-25.0±0.1	-104.5±0.3	77PED/RYL	74-98-6					
C <sub>3</sub> H <sub>8</sub> Cl <sup>+</sup> CH <sub>3</sub> ClC <sub>2</sub> H <sub>5</sub>	Δ <sub>f</sub> H(Ion) from eq	(164) uilibrium	(688) constant detern	nination (85SH	IA/HOJ).							
C <sub>3</sub> H <sub>8</sub> Cl <sub>2</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> SiCl(CH <sub>2</sub> Cl)	(9.2) IP is onset of phot	(126)	(527) band (81ZYK/I	-86 KHV).	-361	*EST	1719-57-9					
C <sub>3</sub> H <sub>8</sub> N <sup>+</sup>												
CH <sub>3</sub> CH <sub>2</sub> CHNH <sub>2</sub>	$\Delta_{\mathbf{f}}H$ (Ion) from ap	152 pearance p	636 ootential measu	rements (81LC	OS/LAM).							
CH <sub>3</sub> CHCH <sub>2</sub> NH <sub>2</sub>	From proton affini 903 kJ/mol.	(161) ty of CH <sub>2</sub>	(673) = CHCH <sub>2</sub> NH <sub>2</sub>	, (RN 107-11-9)	). PA = 215.6	kcal/mol,						

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Ta	ble - Continued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry
C <sub>3</sub> H <sub>8</sub> N <sup>+</sup>					
(CH <sub>3</sub> ) <sub>2</sub> CNH <sub>2</sub>	947 kJ/mol) and (C	in proton attinity of CF CH2)2C=NH2 (PA=:	(17) (69) asurements (81LOS/LAM). IP $I_2 = C(CH_3)NH_2$ (PA = 226.3 221 kcal/mol, 925 kJ/mol) is 147	kcal/mol, kcal/mol, 615 kJ/m	AS).
CH <sub>3</sub> CH <sub>2</sub> NHCH <sub>2</sub>		156 653	160	17.00	
	$\Delta_f H(Ion)$ from app	pearance potential mea	asurements (81LOS/LAM).	عر تعر	
CH <sub>3</sub> CHNHCH <sub>3</sub>		(147) (615)	surements (81LOS/LAM).	15/2/2 E. C. C.	~
CH <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub>	5.7 Δ <sub>f</sub> H(Ion) from app	(158) (661)	(26) (109) surements (81LOS/LAM), IP	81GRI/LOS derived	30208-47-0
( H+		(167) (698) y of azetidine. (RN 503	3-29-7). PA = 222.8 kcal/mol, 9	932. kJ/mol.	
(NH <sub>2</sub> ) H <sup>+</sup>		169 707 7 of c-C <sub>3</sub> H <sub>5</sub> NH <sub>2</sub> (RN 7	765-30-0). PA = 215.2 kcal/mo	1,	
(N) H4		174 730 of N-methylaziridine (	(RN 1072-44-2). PA = 221.6 kg	cal/mol,	
CH3 H+	(1) From proton affinity (917) kJ/mol.	.68) (704) of 2-methylaziridine (F	RN 75-55-8). PA = (219.2) kca	l/mol,	
3H <sub>8</sub> NO <sup>+</sup> HC(OH)N(CH <sub>3</sub> ) <sub>2</sub>	10 From proton affinity o		68-12-2). PA = 211.4 kcal/mo	l, 884 kJ/mol.	
3H <sub>8</sub> NO <sub>2</sub> + i-C <sub>3</sub> H <sub>7</sub> ONHO	13	2 552	1-42-4). PA = 201.9 kcal/mol,		
CH <sub>3</sub> CH(NH <sub>3</sub> )COOH	52 From proton affinity o		.7). PA = 214.8 kcal/mol, 899.	kJ/mol.	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>8</sub> NO <sub>2</sub> + CH <sub>3</sub> NH <sub>2</sub> CH <sub>2</sub> COOH	From proton affii	59 nity of sarco	248 sine (RN 107-97	-1). PA = 2	18.7 kcal/mol, 91	5. kJ/mol.	
C <sub>3</sub> H <sub>8</sub> NO <sub>3</sub> + HOCH <sub>2</sub> CH(NH <sub>3</sub> )COOH							
<b>2</b> \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		15	62				
	From proton affir	ity of L-ser	ine (RN 302-84-	1). $PA = 21$	6.8 kcal/mol, 907	. kJ/mol.	
C <sub>3</sub> H <sub>8</sub> N <sub>2</sub> +							
NH NH	(≤7.90)	(≤216)	(≤903)	34 .	141	*EST	504-70-1
√N-CH <sub>3</sub>	(8.7) IP is onset of pho	(259) toelectron b	(1082) and.	58	243	*EST	6794-95-2
C <sub>3</sub> H <sub>8</sub> N <sub>2</sub> O +		<u> </u>	· · · · · · · · · · · · · · · · · · ·				
(CH <sub>3</sub> NH) <sub>2</sub> CO	(≤9.23)	(≤155)	(≤649)	<b>-</b> 58	-242	*EST	96-31-1
-							
(CH <sub>3</sub> ) <sub>2</sub> NCONH <sub>2</sub>	(≤8.96)	(≤149)	(≤622)	<b>-5</b> 8	-242	*EST	598-94-7
C <sub>3</sub> H <sub>8</sub> N <sub>2</sub> S <sup>+</sup> (CH <sub>3</sub> NH) <sub>2</sub> CS	(≤8.08±0.03)	(≤194)	(≤814)	8	34	*EST	534-13-4
C <sub>3</sub> H <sub>8</sub> O +	· · · · · · · · · · · · · · · · · · ·						
n-C <sub>3</sub> H <sub>7</sub> OH	10.22±0.03	175	731		-254.8±1.	77PED/RYL	71-23-8
	See also: 84BOW/	181 MAC 9111	<i>756</i> MAZAT 20BA <i>C</i>	-55.1	-230.4		
	Sec also: 64BO W/	MAC, SIK	IW/KAI, OODAC	7MOO.			
iso-C <sub>3</sub> H <sub>7</sub> OH	10.12±0.08	168	704		-272.5±0.4	77PED/RYL	67-63-0
	See also: 72POT/S	<i>174</i> OR 81KIN	<i>729</i> 1/KAT. 80BA <i>C/</i> 1	<i>-59.2</i> MOLL 84BO	-247.7 W/MAC		
	000 0150. 721 0 170	,014,01141.	.,1011,000110,1		,		
C <sub>2</sub> H <sub>5</sub> OCH <sub>3</sub>	9.72 IP from 81HOL/F	172 IN, 84BOW	721 //MAC, 81KIM/I		-216.4±0.6 C/MOU, 82LEV/	77PED/RYL LIA, 79AUE/BO	540-67-0 W.
CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> OH <sub>2</sub>		171	714				
2 2 2	From appearance			ног/мом	1).		
CH <sub>2</sub> CHCH <sub>2</sub> HOH <sub>2</sub>	From appearance	_	-				
	propose that ion is	proton-bo	und dimer of wat	er and allyl i	radical.		

Table 1. Positive Ion Table - Continued

			e ion table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>8</sub> O <sub>2</sub> + (CH <sub>3</sub> O) <sub>2</sub> CH <sub>2</sub>	9.5 IP from 82HOL/L	136 .OS2. See a	568 also: 81JOR, 822		-348.2±0.7 KIM/KAT.	77PED/RYL	109-87-5
носн <sub>2</sub> сн <sub>2</sub> осн <sub>3</sub>	9.6 IP is onset of pho	134 toelectron b	562 pand (83BIE/MC	-87 DR, 81KIM/K	-364 (AT).	*EST	109-86-4
C <sub>3</sub> H <sub>8</sub> O <sub>3</sub> P <sup>+</sup>							
COCH3	From proton affir PA = 212.7 kcal/i	-	-	phospholane	: (RN 3741-36-4).		
C <sub>3</sub> H <sub>8</sub> S <sup>+</sup> n-C <sub>3</sub> H <sub>7</sub> SH	9.195±0.005 See also: 81KIM/I	195.8 KAT.	819.2	~16.2±0.1	-67.9±0.6	77PED/RYL	107-03-9
iso-C <sub>3</sub> H <sub>7</sub> SH	9.14 See: 81KIM/KAT	193	806	~18.2±0.1	-76.2±0.6	77PED/RYL	75-33-2
C <sub>2</sub> H <sub>5</sub> SCH <sub>3</sub>	8.54±0.1 See also: 79AUE/	183 BOW.	764	~14.2±0.3	-59.6±1.1	77PED/RYL	624-89-5
C <sub>3</sub> H <sub>8</sub> S <sub>2</sub> + CH <sub>3</sub> SCH <sub>2</sub> SCH <sub>3</sub>	(8.4) IP is onset of photo	(195) coelectron b	(815) pand.	1±2	5±8	*EST	1618-26-4
C <sub>3</sub> H <sub>8</sub> Sc <sup>+</sup> C <sub>2</sub> H <sub>4</sub> ScH(CH <sub>3</sub> )	Δ <sub>f</sub> H(Ion) from 84	(197) TOL/BEA	(824)				
$C_3H_8Si^+$ $(CH_3)_2Si=CH_2$	7.71±0.03 IP from 82DYK/J	183 OS. See als	765 o: 81KOE/MCK	5	21	86WAL	4112-23-6
C <sub>3</sub> H <sub>9</sub> + C <sub>3</sub> H <sub>9</sub>	From proton affin	191 ity of C <sub>3</sub> H <sub>8</sub>	797 3. (RN 74-98-6).	PA = 150 kg	cal/mol, 628 kJ/m	ol.	
C <sub>3</sub> H <sub>9</sub> Al <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> Al	(≤9.76)	(≤206)	(≤861)	-19±3	-81±11	77PED/RYL	75-24-1
C <sub>3</sub> H <sub>9</sub> As <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> As	(8.2) IP is onset of photon	(192) oelectron b	(804) and (82ELB/DI	3±2 E).	13±10	77PED/RYL	593-88-4
C <sub>3</sub> H <sub>9</sub> AsO <sub>3</sub> <sup>+</sup> As(OCH <sub>3</sub> ) <sub>3</sub>	(7.93)	(51)	(215)	131±0.5	-550±2	77PED/RYL	6596-95-8

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	ıl Δ <sub>f</sub> H(Io	on)	$\Delta_{\mathbf{f}}H(Nc)$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>3</sub> H <sub>9</sub> B <sup>+</sup>			<del></del>				
(CH <sub>3</sub> ) <sub>3</sub> B	(9.5)	(190)	(794)	-29±2	-123±10	77PED/RYL	593-90-8
	TD is anost of al	(196)	(820)	-23	-97		
	IP is onset of pl	notoelectron c	ano.				
C <sub>3</sub> H <sub>9</sub> BO <sub>3</sub> +							
$B(OCH_3)_3$	(10.0)	(15)	(65)	-215±0.5	-900±2	77PED/RYL	121-43-7
	IP is onset of pl	otoelectron b	and.				
C <sub>3</sub> H <sub>9</sub> BS <sub>3</sub> +							
B(SCH <sub>3</sub> ) <sub>3</sub>	(8.74)	(164)	(687)	-37±0.7	-156±3	77PED/RYL	997-49-9
C <sub>3</sub> H <sub>9</sub> BrPb <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> PbBr	(≤9.30)	(≤229)	(≤956)	14	59	85DEW/HOL	6148-48-7
		- /					
C3H9BrSi +	10.0	(1(1)	((70)	***			
(CH <sub>3</sub> ) <sub>3</sub> SiBr	10.0	(161) <i>(169)</i>	(672) (707)	-70±1 -61±0.8	-293±4 -258±4	77PED/RYL	2857-97-8
	IP is onset of ph			-01±0.0	-20014		
0 M D 0 +							<del></del>
C <sub>3</sub> H <sub>9</sub> BrSn <sup>+</sup> . (CH <sub>3</sub> ) <sub>3</sub> SnBr	(0.4)	(104)	(7(0)	22.1	100.0	77777 MIII	4044.44.0
(Сп3)33пы	(9.4)	(184)	(769)	-33±1	-138±6	77PED/RYL	1066-44-0
C <sub>3</sub> H <sub>9</sub> ClGe <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> GeCl	(9.2)	(148)	(620)	-64±3	-268±13	80TEL/RAB	1529-47-1
	IP is onset of ph	otoelectron ba	and. See also:	79DRA/GLA2	•		
C <sub>3</sub> H <sub>9</sub> ClSi <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> SiCl	(10.15)	(149)	(625)	-85	-354	81BEL/PER	75-77-4
		(156)	(654)	<i>-78</i>	-325		
	IP is onset of ph	otoelectron ba	ind. See also:	84SZE/BAE, 8	1ZYK/KHV.		
C <sub>3</sub> H <sub>9</sub> ClSn <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> SnCl	(9.90)	(185)	(773)	<del>-4</del> 3	-182	*EST	1066-45-1
	IP from 82LEV/						
C <sub>3</sub> H <sub>9</sub> FN <sup>+</sup>				<del></del>			
CH <sub>2</sub> FCH <sub>2</sub> CH <sub>2</sub> NH <sub>3</sub>		87	365				
2 2 2 3	From proton affi			(RN 462-41-9)	. PA = 217.8	kcal/mol,	
	911. kJ/mol.	- <b>2</b>		• •	_	•	
C <sub>3</sub> H <sub>9</sub> FSi <sup>+</sup>	<del></del>						
(CH <sub>3</sub> ) <sub>3</sub> SiF	10.31±0.04	112	468	-126	-527	77MUR/BEA	420-56-4
							.20 00-1
C <sub>3</sub> H <sub>9</sub> Ga +	<b>(0.0)</b>	4					
(CH <sub>3</sub> ) <sub>3</sub> Ga	(8.9)		(817)	-10±1	-42±6	77PED/RYL	1445-79-0
	IP is onset of pho	toelectron ba	nd.				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H kcal/me	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>9</sub> Ge <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> Ge	Δ <sub>f</sub> H(Ion) from ap (CH <sub>3</sub> ) <sub>2</sub> Ge≃CH <sub>2</sub>						
C <sub>3</sub> H <sub>9</sub> N <sup>+</sup> n-C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub>	8.78±0.02 See also: 81KIM/k	186 KAT.	777	-16.8±0.1	-70.2±0.4	77PED/RYL	107-10-8
iso-C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub>	8.72±0.03 See also: 81KIM/k	181 KAT.	758	-20.0±0.1	~83.8±0.5	77PED/RYL	75-31-0
(CH <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> )NH	(8.15) IP from 79AUE/B	(177) OW.	(740)	−11±0.5	-46±2	*EST	624-78-2
(CH <sub>3</sub> ) <sub>3</sub> N	7.82±0.06 See also: 81KIM/K	175 XAT, 82E	731 LB/DIE.	-5.7±0.1	~23.7±0.6	77PED/RYL	75-50-3
C <sub>3</sub> H <sub>9</sub> NO <sup>+</sup> NH <sub>2</sub> (CH <sub>2</sub> ) <sub>3</sub> OH	(9.0) IP is onset of phot	(156) oelectror	(650) 1 band.	-52	-218	*EST	156-87-6
CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(8.9) IP is onset of phot	(161) oelectror	(675) a band.	-44±0.7	−184±3	*EST	109-85-3
CH <sub>3</sub> ON(CH <sub>3</sub> ) <sub>2</sub>	≤8.78 IP from 83MOL/P	(≤194) IK. See a	(≤810) ilso: 82LEV/LIA	<b>9</b>	-37	*EST	5669-39-6
C <sub>3</sub> H <sub>9</sub> N <sub>3</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiN <sub>3</sub>	(≤9.7±0.1)	(≤241)	(≤1007)	17±2	71±8	80TEL/RAB	4648-54-8
С <sub>3</sub> Н <sub>9</sub> О <sup>+</sup> п-С <sub>3</sub> Н <sub>7</sub> ОН <sub>2</sub>	From proton affin	114 ity of n-C	476 3H <sub>7</sub> OH (RN 71	-23-8). PA = 1	190.8 kcal/mol	, 798. kJ/mol.	
i-C <sub>3</sub> H <sub>7</sub> OH <sub>2</sub>	From proton affin	109 ity of i-C	457 <sub>3</sub> H <sub>7</sub> OH (RN 67-	63-0). PA = 1	91.2 kcal/mol,	800. kJ/mol.	
С <sub>2</sub> Н <sub>5</sub> ОНСН <sub>3</sub>	From proton affin	118 ity of C <sub>2</sub> I	492 H <sub>5</sub> OCH <sub>3</sub> (RN 54	10-67-0). PA =	196.4 kcal/m	ol, 822. kJ/mol.	
С <sub>3</sub> Н <sub>9</sub> ОР <sup>+</sup> (СН <sub>3</sub> ) <sub>3</sub> РО	(9.5) IP is onset of phot	(115) oelectron	(482) a band.	-104±2	-434±8	77PED/RYL	676-96-0
С <sub>3</sub> H <sub>9</sub> O <sub>2</sub> + носн <sub>2</sub> сн <sub>2</sub> онсн <sub>3</sub>	From proton affin PA = 182.6 kcal/n			(RN 109-86-4)	(78TAF/TA	Δ).	

Table 1. Positive Ion Table - Continued

ION	Ionization materati	ol A 77/7	·>	A 77/\1-			
Neutral	Ionization potenti eV	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>3</sub> H <sub>9</sub> O <sub>3</sub> P +							
P(OCH <sub>3</sub> ) <sub>3</sub>	(8.50) See also: 81CH	(29) IA/FIN, 82WC	(123) DR/HAR, <i>7</i> 7C	−167±5 OW/GOO.	-697±20	77PED/RYL	121-45-9
C <sub>3</sub> H <sub>9</sub> O <sub>3</sub> PS <sup>+</sup>							
(CH <sub>3</sub> O) <sub>3</sub> PS	(≤9.16)	(≤28)	(≤117)	-183	-767	*EST	152-18-1
C <sub>3</sub> H <sub>9</sub> O <sub>4</sub> P +							·
(CH <sub>3</sub> O) <sub>3</sub> PO	9.99 See also: 81CH	(-34) IA/FIN.	(-143)	-265	-1107	*EST	512-56-1
C <sub>3</sub> H <sub>9</sub> P +							
(CH <sub>3</sub> ) <sub>3</sub> P	8.06±0.05 See also: 82IKU	162 J/KEB, 82CO	677 W/KEM, 82EI	-24±1 LB/DIE, 82BAN	-101±5 N/CHA2.	77PED/RYL	594-09-2
С3Н9Рь+							
(CH <sub>3</sub> ) <sub>3</sub> Pb		200	840				
	$\Delta_f H(\text{Ion}) \text{ from}$ $(\text{CH}_3)_2 \text{Pb} = \text{CH}_3$						
C <sub>3</sub> H <sub>9</sub> S +							
n-C <sub>3</sub> H <sub>7</sub> SH <sub>2</sub>	From proton af	158 finity of n-C <sub>3</sub> 1	660 H <sub>7</sub> SH (RN 101	7-03-9). PA = :	191.6 kcal/mo	, 802 kJ/mol.	
i-C <sub>3</sub> H <sub>7</sub> SH <sub>2</sub>	From proton af	153 finity of i-C <sub>3</sub> H	642 I <sub>7</sub> SH (RN 75-3	33-2). PA = 19	4.1 kcal/mol, 8	312 kJ/mol.	
CH <sub>3</sub> SHC <sub>2</sub> H <sub>5</sub>		148	619				
<i>3                                    </i>	From proton af		SC <sub>2</sub> H <sub>5</sub> (RN 62	4-89-5). PA =	203.5 kcal/mo	l, 851 kJ/mol.	
C <sub>3</sub> H <sub>9</sub> Sb <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> Sb	(7.7)	(185)	(775)	8±6	32±25	77PED/RYL	594-10-5
	IP is onset of ph	otoelectron b	and(82ELB/D	IE).			
C <sub>3</sub> H <sub>9</sub> Si <sup>+</sup>							• • • • • • • • • • • • • • • • • • • •
(CH <sub>3</sub> ) <sub>3</sub> Si	(6.5)	(150)	(630)		-3±8	86DON/WAL	16571-41-8
	Δ <sub>f</sub> H(Ion) from 84SZE/BAE2).				<i>26</i> E/BAE,		
a 11 a +	•						
C3H9Sn <sup>+</sup> (CH3)3Sn	(7.10±0.05)	(181)	(759)				
(0.13/3011	$\Delta_f H(Ion)$ from : $(CH_3)_2 Sn = CH$	appearance po	tential detern				
C <sub>3</sub> H <sub>10</sub> As +							
(CH <sub>3</sub> ) <sub>3</sub> AsH		155	650				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry
C <sub>3</sub> H <sub>10</sub> N <sup>+</sup>				<del>-</del>	
n-C <sub>3</sub> H <sub>7</sub> NH <sub>3</sub>		131 548			
- · · · · ·	From proton affin	ity of n-C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub> (RN 1	07-10-8). PA = 217.9 kcal/n	nol, 912. kJ/mol.	
i-C <sub>3</sub> H <sub>7</sub> NH <sub>3</sub>		127 531			
	From proton affin	ity of i-C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub> (RN 7	5-31-0). PA = 218.6 kcal/mc	ol, 915. kJ/mol.	
(CH <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> )NH <sub>2</sub>		132 552			
	From proton affin 932. kJ/mol.	ity of (CH <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> )NH (	RN 624-78-2). PA = 222.8 I	ccal/mol,	
(CH <sub>3</sub> ) <sub>3</sub> NH		135 564			
	From proton affin	ity of (CH <sub>3</sub> ) <sub>3</sub> N (RN 75-5	0-3). PA = 225.1 kcal/mol, 9	942. kJ/mol.	
C <sub>3</sub> H <sub>10</sub> NO +					
NH <sub>3</sub> (CH <sub>2</sub> ) <sub>3</sub> OH	_	85 356			
	From proton affin 956.5 kJ/mol.	ity of NH <sub>2</sub> (CH <sub>2</sub> ) <sub>3</sub> OH (R	N 156-87-6). PA = 228.6 kc	al/mol,	
CH3OCH2CH2NH3		98 412			
	From proton affin 934 kJ/mol.	ity of CH3OCH2CH2NH	$f_2$ (RN 109-85-3). PA = 223	.3 kcal/mol,	
C <sub>3</sub> H <sub>10</sub> N <sub>2</sub> +					
(CH3)2NNH(CH3)			21 87	69BEN/CRU	1741-01-1
			e adiabatic IP of this compo- nined by threshold measure		
	-	-	ic value because of the large		
	change associated		J		
C <sub>3</sub> H <sub>10</sub> OP+					
(CH <sub>3</sub> ) <sub>3</sub> POH		124 518			
	From proton affin 908. kJ/mol.	ity of (CH <sub>3</sub> ) <sub>3</sub> PO (RN 676	6-96-0) (84BOL/HOU). PA	= 217.1 kcal/mol,	
	700. M/IIIOI.				
C <sub>3</sub> H <sub>10</sub> O <sub>3</sub> P +		-22 -92			
HP(OCH <sub>3</sub> ) <sub>3</sub>	From proton affin		45-9). PA = 220.6 kcal/mo	l, 923. kJ/mol.	
C <sub>3</sub> H <sub>10</sub> O <sub>3</sub> PS +					
(CH <sub>3</sub> O) <sub>3</sub> PSH		-32 -134			
. 5 .5	From proton affin		52-18-1). PA = 214.5 kcal/m	ol, 897. kJ/mol.	
C <sub>3</sub> H <sub>10</sub> O <sub>4</sub> P +					
(CH <sub>3</sub> O) <sub>3</sub> POH		-111 -464			
	From proton affin	ity of (CH <sub>3</sub> O) <sub>3</sub> PO (RN 5	12-56-1). PA = 212.0 kcal/n	nol, 887. kJ/mol.	_
C <sub>3</sub> H <sub>10</sub> P <sup>+</sup>					
(CH <sub>3</sub> ) <sub>3</sub> PH	_	114 479			
	From proton affin	ity of (CH <sub>3</sub> ) <sub>3</sub> P (RN 594-0	9-2). $PA = 227.1 \text{ kcal/mol},$	950. kJ/mol.	

Table 1. Positive Ion Table - Continued

TON	•					N		
Neutral	Ionization potential eV	∆ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number	
C <sub>3</sub> H <sub>10</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiH	9.9 IP from 81HOT.	189	792	-39±1	-163±4	86DON/WAL	993-07-7	
C <sub>3</sub> H <sub>10</sub> Sn <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SnH	(≤9.9)	(≤228)	(≤955)	0±2	0±8	80TEL/RAB	1631-73-8	
C <sub>3</sub> H <sub>11</sub> N <sub>2</sub> + NH <sub>2</sub> (CH <sub>2</sub> ) <sub>3</sub> NH <sub>3</sub>	From proton affir 979. kJ/mol.	124 nity of NH <sub>2</sub> (	518 (CH <sub>2</sub> ) <sub>3</sub> NH <sub>2</sub> (	(RN 109-76-2).	PA = 234.1 k	ccal/mol,		
C <sub>3</sub> H <sub>12</sub> BN <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> NBH <sub>3</sub>	(9.28±0.2)	(194) <i>(203)</i>	(810) <i>(848)</i>	-20 -11	-85 -47	82TN270	75-22-9	
C <sub>3</sub> H <sub>12</sub> B <sub>3</sub> N <sub>3</sub> + C <sub>3</sub> H <sub>12</sub> B <sub>3</sub> N <sub>3</sub> + C <sub>43</sub> C <sub>2</sub> B <sub>3</sub> N <sub>4</sub> C <sub>43</sub> C <sub></sub>	(9.1±0.15)	(-13)	(-55)	-223	-933	70FIN/GAR	1004-35-9	
HB N CH3	(9.07)	(-8)	(-33)	−217±1	−908±4	80TEL/RAB	5314-85-2	
C <sub>3</sub> IN <sup>+</sup> IC≡CCN	(10.18±0.02) See also: 84KUH/	(347) MAI.	(1451)	112±10	469±40	79BUC/VOG	2003-32-9	
C <sub>3</sub> La <sup>+</sup> LaC <sub>3</sub>	(6.8±0.5)	(336)	(1404)	179±1	748±1	81GIN/PEL	12602-63-0	
C <sub>3</sub> N <sub>2</sub> O <sup>+</sup> (CN) <sub>2</sub> CO	(≤12.56)	(≤349)	(≤1459)	59±1	247±6	77PED/RYL	1115-12-4	
C <sub>3</sub> O <sub>2</sub> + C <sub>3</sub> O <sub>2</sub>	10.60	222	929	-22±0.5	-94±2	71JANAF	504-64-3	
C <sub>4</sub> + C <sub>4</sub>	(12.6)	(522)	(2187)	232±8	971±33	71JANAF	12184-80-4	
C <sub>4</sub> Cl <sub>2</sub> Hg <sup>+</sup> (ClC≡C) <sub>2</sub> Hg	9.58±0.02 IP is onset of photo	(373) oelectron ba	(1559) and (81FUR/	152 PIA).	635	*EST	64771-59-1	

Table 1. Positive Ion Table - Continued

		L. L USILI	ve Ion Table -	Contin	ucu ————		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> Cl <sub>2</sub> O <sub>2</sub> + C <sub>1</sub> C <sub>1</sub> O	(9.5) IP is onset of phot	(204) coelectron l	(856) band (81BOC/RIE	-14 )).	-61	*EST	2892-63-9
C <sub>4</sub> F <sub>2</sub> O <sub>3</sub> +							
0 F C C C C C C C C C C C C C C C C C C	. (11.45) IP from 81ASB/SV	(79) /E.	(330)	-185	<b>-775</b>	*EST	669-78-3
C <sub>4</sub> F <sub>4</sub> O <sub>2</sub> +  F O	10.05±0.1 IP is onset of phot	(47) oelectron t	(199) pand (85GLE/SCF	-184 I, 85ALB/F	-771 IEL).	*EST	663-45-6
C <sub>4</sub> F <sub>6</sub> <sup>+</sup> CF <sub>2</sub> =CFCF=CF <sub>2</sub>	(9.5)	(-5)	(-21)	-224	-938	68LAC/SKI	685-63-2
$C_4F_6O^+$ $(CF_3)_2C=C=O$	(10.67) IP is onset of photo	(-95) oelectron t	(-398) pand (83GLE/SAA	-341 \).	-1427	*EST	
F F F	(10.7) IP is onset of photo	(–30) oelectron t	(-124) pand (85GLE/SCH	<b>–</b> 276 ().	-1157	*EST	699-35-4
$C_4F_6S^+$ $(CF_3)_2C=C=S$	(9.4) IP is onset of photo	(-71) oelectron t	(-295) pand (83GLE/SAA	-287 .).	-1202	*EST	7445-60-5
C <sub>4</sub> F <sub>6</sub> S <sub>2</sub> +  F <sub>3</sub> C  S  F <sub>3</sub> C	9.6 IP is onset of photo	(37) oelectron t		-185 , 83JIA/MC	-772 DH).	*EST	360-91-8
C <sub>4</sub> F <sub>8</sub> + (Z)-2-C <sub>4</sub> F <sub>8</sub>	(11.1) IP is onset of photo	(~126) oelectron b	(-526) pand.	-382	-1597	70BEN/O'N	1516-65-0
(E)-2-C <sub>4</sub> F <sub>8</sub>	(11.0) IP is onset of photo	(~129) pelectron b	(-540) eand.	-383	-1601	70BEN/0'N	1516-64-9

Table 1. Positive Ion Table - Continued

	Table	1. 1031	tive Ion Tabl	e - Contin			
ION Neutral	Ionization potential eV	•	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C4FeI <sub>2</sub> O <sub>4</sub> + Fe(CO) <sub>4</sub> I <sub>2</sub>	(8.4) IP is onset of pho	(42) toelectron	(174) n band.	-152±2	-636±9	82PIL/SKI	14911-55-8
C <sub>4</sub> HCl <sup>+</sup> CH=CC=CCl	(9.72±0.02)	(345)	(1443)	121±0.5	505±2	*EST	6089-44-7
C <sub>4</sub> HC <sub>0</sub> O <sub>4</sub> + HC <sub>0</sub> (CO) <sub>4</sub>	(8.2) IP is onset of pho	(53)	(222) n band.	-136±0.5	−569±2	77PED/RYL	16842-03-8
C <sub>4</sub> HF <sub>7</sub> N <sup>+</sup> n-C <sub>3</sub> F <sub>7</sub> CNH	From proton affin 700. kJ/mol.	−110 ity of n-C	-460 23F7CN (RN 37	5-00-8). PA =	167.4 kcal/mo	ι,	
С <sub>4</sub> НF <sub>9</sub> О <sup>†</sup> (CF <sub>3</sub> ) <sub>3</sub> СОН	12.25 IP from 83KOP/M	(-266) IOL.	(-1115)	(-549)	(-2297)	*EST	2378-02-1
C <sub>4</sub> HNiO <sub>4</sub> <sup>+</sup> HNi(CO) <sub>4</sub>	From proton affin	(43) ity of Ni(	(179) CO) <sub>4</sub> (RN 1346	3-39-3). PA =	(180) kcal/mo	l, (753) kJ/mol.	
C <sub>4</sub> H <sub>2</sub> + HC≡CC≡CH	10.180±0.003 See also: 80MAI/I	340 THO.	1422	105	440	85STE/FAH	460-12-8
C <sub>4</sub> H <sub>2</sub> Br <sub>2</sub> S <sup>+</sup>							-
Br S Br	(≤8.49)	(≤233)	(≤976)	38	157	*EST	3141-27-3
Br Br	(≤8.94)	(≤246)	(≤1028)	39	165	•est	3141-26-2
C <sub>4</sub> H <sub>2</sub> Cl <sub>2</sub> S <sup>+</sup>							
ci_s_a	(8.60±0.05)	(213)	(890)	14	60	*EST	3172-52-9
C <sub>4</sub> H <sub>2</sub> F <sub>4</sub> <sup>+</sup> CF <sub>2</sub> CHCHCF <sub>2</sub>	(10.6±0.1)	(82)	(343)	-163	-680	*EST	407-70-5

Table 1. Positive Ion Table - Continued

8.6 IP is onset of phot  8.812±0.005	Δ <sub>f</sub> H(Io kcal/mol	kJ/mol (966)	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference  *EST  *EST	CAS registry number 1003-09-4 872-31-1
IP is onset of phot 8.812±0.005	(236)	(986)	33			
IP is onset of phot 8.812±0.005	(236)	(986)	33			
	* ** ***			136	*EST	872-31-1
8.89±0.05	(225)	(941)	20			
8.89±0.05	(225)	(941)	20		1	
				83	*EST	96-43-5
From proton affini	(-329) ity of (CF <sub>3</sub> )	(–1375) <sub>3</sub> CNH <sub>2</sub> (RN 2	809-92-9). PA	. = (191.5) kca	al/mol,	
		- 100 Mg				
≤8.46	(≤242)	(≤1010)	46	194	•EST	3437-95-4
(≤8.46)	(≤241)	(≤1010)	46	194	*EST	10486-61-0
(10.1) IP is onset of photo	(259) oelectron b	(1084) and.	26	110	*EST	1001-56-5
	(329)	(1378)	81±0.7	338±3	*EST	13752-78-8
10.78±0.02		(<910)	-7	-31	*EST	609-39-2
	IP is onset of phot	IP is onset of photoelectron b  10.78±0.02 (329)	IP is onset of photoelectron band.	IP is onset of photoelectron band.  10.78±0.02 (329) (1378) 81±0.7	IP is onset of photoelectron band.  10.78±0.02 (329) (1378) 81±0.7 338±3	IP is onset of photoelectron band.  10.78±0.02 (329) (1378) 81±0.7 338±3 *EST

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>4</sub> H <sub>2</sub> F <sub>9</sub> N <sup>+</sup> (CF <sub>3</sub> ) <sub>3</sub> CNH <sub>2</sub>	(10.4) IP from 79AUE/	(-263) BOW.	(-1100)	-503	-2104	*EST	2809-92-9			
C <sub>4</sub> H <sub>2</sub> F <sub>9</sub> O <sup>+</sup> (CF <sub>3</sub> ) <sub>3</sub> COH <sub>2</sub>	-346 -1449  From proton affinity of $(CF_3)_3COH$ (RN 2378-02-1). PA = 163.1 kcal/mol, 682. kJ/mol.									
C <sub>4</sub> H <sub>2</sub> I <sub>2</sub> S +		··				·····				
1 \1	≤8.28	(≤256)	(≤1072)	65	273	*EST	625-88-7			
I J	(≤8.45)	(≤263)	(≤1099)	68	284	•EST	19259-08-6			
C <sub>4</sub> H <sub>2</sub> N <sub>2</sub> <sup>+</sup> (Z)-CH(CN)CH(CN)	(11.15)	(338)	(1416)	81.3±0.5	340.2±1.9	77PED/RYL	928-53-0			
(E)-CH(CN)CH(CN)	11.16±0.03	338	1417	81	340	82CHU/NGU	764-42-1			
C <sub>4</sub> H <sub>2</sub> O <sub>2</sub> +	(≤9.79)	(≤239)	(≤1002)	14	57	*EST	32936-74-6			
C <sub>4</sub> H <sub>2</sub> O <sub>3</sub> +	(10.8) IP is onset of pho	(154) toelectron b	(644) and (81KIM/KA <sup>*</sup>	-95±1 I).	~398±5	77PED/RYL	108-31-6			
С <sub>4</sub> H <sub>3</sub> + нссссн <sub>2</sub>	(291) (1217) From proton affinity of HC≡CC≡CH (RN 460-12-8) (87DEA/MAU). PA = 180 kcal/mol, 753 kJ/mol.									

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued												
ION Neutral	Ionization potentia	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number					
$C_4H_4^+$ $CH_2=C=C=CH_2$	(9.15) See also: 8SDE	(294) W/TIE.	(1232)	83	349	82ROS/DAN	2873-50-9					
CH <sub>2</sub> =CHC=CH	9.58±0.02	(294)	(1229)	73	305	69STU/WES	689-97-4					
CH <sub>2</sub>	8.15  Heat of formati $\Delta_f H(\text{Neutral})$ is				423 prements (82RG	87STA/NOR DS/DAN);	4095-06-1					
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> + NCCH <sub>2</sub> CH <sub>2</sub> CN	12.1±0.25 IP from 82CHE	329 /LAP.	1377	50.1±0.1	209.7±0.6	77PED/RYL	110-61-2					
	(8.64)	(266)	(1112)	66.5±0.2	278.3±1	77PED/RYL	289-80-5					
	9.23 See also: 83PIA,	260 /KEL.	1087	47.0±0.2	196.6±0.9	77PED/RYL	289-95-2					
	9.29±0.01 See also: 83PIA	261 KEL.	1092	46.8±0.3	196.0±1.3	77PED/RYL	290-37-9					
C4H4NaO+	·					<del></del>						
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> O +	(8.89±0.02)	(252)	(1056)	47	198	*EST	1457-42-7					
Or S	(8.80±0.02)	(231)	(966)	28	117	*EST	17043-94-6					
ZH Z Z	(10.06±0.05)	(221)	(924)	-11	-47	*EST	557-01-7					

Table 1. Positive Ion Table - Continued

		2. 2 00161	ve luii labi	e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> O +							
NO NO	(9.0) IP is onset of photon	(235) toelectron l	(984) pand.	28	116	*EST	2423-65-6
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> +			<del></del>			,	······································
TZ O	(9.2) IP is onset of phot	(140) coelectron t	(585) pand. See also:	-72±0.5 81YU/ODO.	-303±2	77NAB/SAB	66-22-8
NO 2	(9.30±0.05)	(237)	(990)	23	93	*EST	5919-26-6
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> O <sub>3</sub> +	· · · · · · · · · · · · · · · · · · ·						
O NH	(10.20)	(103)	(430)	-132	-554	72DOM	67-52-7
C <sub>4</sub> H <sub>4</sub> O + CH <sub>3</sub> CH = C = C = O	8.68±0.05	(215)	(900)	15	63	*EST	78957-08-1
C113C11-C-C-O	IP from 83TER/H					231	70757-00-1
(CH <sub>2</sub> ) <sub>2</sub> C=C=O	From appearance	198 potential de	828 etermination (	82BUR/HOL).			
CH <sub>2</sub> =CHCH=C=O	8.29±0.05 IP from 79TER/B	(195) UR. See als	(817) :o: 82BUR/HC	4 DL, 81MOH/HI	17 R, 79HOL/TI	*EST ER, 85MCN/SUF, 83	50888-73-8 IBOC/HIR.
CH <sub>2</sub> = C = CHCHO	(9.5) $\Delta_f H(Ion)$ from 82)	(236) BUR/HOL	(987) . IP from 79H	18 OL/TER.	75	*EST	53268-92-1
HC≡CCH <sub>2</sub> CHO	(9.85) IP estimated in 821	(247) BUR/HOL	(1034)	20	84	*EST	52844-23-2
СН <sub>3</sub> С≡ССНО	10.20±0.02 IP from 79CAR/M	(253) OU. See al	(1057) so: 79TER/BU	17 JR, 82BUR/HC	73 DL, 79HOL/T	*EST ER.	1119-19-3
CH <sub>3</sub> COC≡CH	10.17±0.02 IP from 79CAR/M		(1046.75) so: 79TER/BU	15.6±.2 JR, 82BUR/HC	65.5±1 DL, 79HOL/T	85FUC ER.	1423-60-5
CH <sub>2</sub> =C=C=CHOH	From appearance p	222 potential de	931 etermination(8	2BUR/HOL).			

Table 1. Positive Ion Table - Continued

		1 031111	e full fable	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>4</sub> O <sup>+</sup> HC≡CCH = CHOH	From appearance	220 potential de	922 etermination(82E	BUR/HOL).			59095-55-5
CH <sub>2</sub> =C(OH)C≅CH	(8.92) Δ <sub>f</sub> H(Ion) from ap See also: 82BUR/I			20±2 ation (86TC	83±7 JR/HAV2).	86TUR/HAV2	
HC=COCH ≈ CH <sub>2</sub>	9.40 IP from 82BUR/H	(273) OL. Sec als	(1142) so: 79HOL/TER	56	235	*EST	
(°)	8.883±0.003 See also: 82BUR/I 80TED/VID, 83B0				-34.8±0.4 AL/KLA, 81KIM	77PED/RYL /KAT, 82BIE/AS	110-00-9 B,
	(9.3) From appearance IP from 79HOL/T	_	(933) etermination; kin	8 etic energy	33 release = 0.19 eV	*EST (82BUR/HOL).	32264-87-2
н <sub>3</sub> с	9.15±0.05 See also: 79TER/E	(240) BUR, 82BU	(1004) R/HOL, 79HOL	29 /TER.	121	*EST	4883-96-9
c=o	(8.78) IP from 81BOC/H	(222) IR.	(931)	20	. 84	*EST	
сно	(9.6) IP from 79HOL/T	(235) ER.	(983)	14	58	*EST	36998-21-7
C <sub>4</sub> H <sub>4</sub> O <sub>2</sub> + HC≡CCOOCH <sub>3</sub>	(10.3) IP is onset of phot	(214) oelectron b	(894) and (82BIE/ASE	-24 3).	-100	*EST	922-67-8
(°)	(7.75±0.02)	(152)	(633)	~27±1	-115±5	*EST	290-67-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry
C <sub>4</sub> H <sub>4</sub> O <sub>2</sub> +				<del></del>			
C <sub>o</sub>	(9.4) IP is onset of photon	(178) toelectron b	(745) and.	-39	-163	*EST	33689-28-0
H <sub>2</sub> C 0	(9.6±0.02) IP from 84OLI/FI	(176) .E.	(736)	-45.5±0.1	−190.3±0.4	77PED/RYL	674-82-8
C <sub>4</sub> H <sub>4</sub> O <sub>3</sub> +				· · · · · · · · · · · · · · · · · · ·			
C <sub>4</sub> H <sub>4</sub> O <sub>3</sub> +	(10.6) IP is onset of phot	(119) oelectron b	(498) and (81KIM/KA	-125 Г).	-525	77PED/RYL	108-30-5
C <sub>4</sub> H <sub>4</sub> O <sub>4</sub> <sup>+</sup>							
(E)-HO <sub>2</sub> CCH = CHCO <sub>2</sub> H	(10.7) IP is onset of phot	(85) oelectron b	(352) and.	-162±0.6	-680±3	77PED/RYL	110-17-8
C <sub>4</sub> H <sub>4</sub> S +							
s	8.87±0.04 See also: 80TED/\	232 /ID, 83BO	971 C/ROT, 81GAL/k	27.5±0.1 KLA, 82KL	115.0±0.4 A/SAB.	81KUD/KUD3	110-02-1
C <sub>4</sub> H <sub>4</sub> S <sub>2</sub> +				·			
(s)	(7.7) IP is onset of photo	(233) oelectron ba	(976) and.	56±3	233±13	*EST	290-79-9
C <sub>4</sub> H <sub>5</sub> +							
$CH_2 = CCH = CH_2$	From appearance p	(246) potential me	(1029) easurements (84L	.os/Hol).			62698-26-4
CH≡CCHCH <sub>3</sub>	7.97 From appearance p	257 potential me	1074 easurements (84L	73 .OS/HOL).	305	82MCM/GOL	
CH <sub>3</sub> C≊CCH <sub>2</sub>	7.95 . From appearance p	252 potential me	1056 easurements (84L	69 OS/HOL).	289	82MCM/GOL	.82252 -88 -6 64235-83-2-

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>5</sub> +	From appearance	(237) potential	(992) measurements	(84LOS/HOL)	).		60824-24-0
C <sub>4</sub> H <sub>5</sub> CIO <sup>+</sup> (E)-CH <sub>3</sub> CH = CHCOCI	(9.4) IP is onset of pho	(216) toelectror	(906) a band (81MOH	-0.2 /HIR).	-1	*EST	625-35-4
C <sub>4</sub> H <sub>5</sub> F <sub>3</sub> O <sub>2</sub> + CF <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	(11.0) IP is onset of pho	(5) toelectror	(19) a band.	-249	-1042	*EST	383-63-1
C <sub>4</sub> H <sub>5</sub> F <sub>4</sub> O <sub>2</sub> + CF <sub>3</sub> C(OH)OCH <sub>2</sub> CH <sub>2</sub> F	From proton affir 747. kJ/mol.	-105 nity of CF	-441 <sub>3</sub> COOCH <sub>2</sub> CH <sub>2</sub>	F (RN 1683-88	-1). PA = 178	.6 kcal/mol,	
C <sub>4</sub> H <sub>5</sub> F <sub>6</sub> O <sup>+</sup> (CF <sub>3</sub> ) <sub>2</sub> C(CH <sub>3</sub> )OH <sub>2</sub>	From proton affir 699. kJ/mol.	-192 nity of (CI	-805 <sup>г</sup> 3) <sub>2</sub> С(СН <sub>3</sub> )ОН	(RN 1515-14-0	5). PA = 167.0	kcal/mol,	
C <sub>4</sub> H <sub>5</sub> N <sup>+</sup> CH <sub>2</sub> =CHCH <sub>2</sub> CN	10.20±0.05 See also: 84OHN	273 /MAT.	1140	37±0.5	156±2	77PED/RYL	109-75-1
CH <sub>2</sub> C(CH <sub>3</sub> )CN	10.34	269	1128	31	130	80WIL/BAE	126-98-7
(E)-CH <sub>3</sub> CH = CHCN	(≤10.23±0.05)	(≤272)	(≤1137)	36	150	82CHU/NGU	627-26-9
N N N N N N N N N N N N N N N N N N N	8.208±0.005 See also: 81GAL/	215.2 KLA, 82E	900.2 BIE/ASB, 80TEI	25.9±0.1 D/VID, 82KLA	108.3±0.4 √SAB.	80WIL/BAE	109-97-7
CN CN	10.25	280	1172	44±0.2	183±1	82FUC/HAL	5500-21-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +							•
	From proton affin	216 aity of pyrida	906 nzine (RN 289-8	:0-5). PA =	215.7 kcal/mc	ıl, 902 kJ/mol.	
	From proton affin 882. kJ/mol.	202 lity of pyrim	846 idine (RN 289-9	95-2). PA =	210.8 kcal/mo	ol,	
	From proton affin	203 ity of pyrazi	852 ne (RN 290-37-	9). PA = 20	9.0 kcal/mol,	874. kJ/mol.	
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> O <sup>+</sup>							
NH O	From proton affin ~870 kJ/mol.	146 ity of 2(1H)	613 -pyrimidinone (	(RN 557-01-7	'). PA = -20	8 kcal/mol,	
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> +							
( NH O ) H+	From proton affin	(85) ity of uracil	(357) (RN 66-22-8).	PA = ~208 l	ccal/mol, ~870	kJ/mol.	
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> S <sub>2</sub> +							
( NH S ) H+	From proton affin ~907 kJ/mol.	(200) ity of dithio	(836) uracil (RN 2001	-93-6). PA :	= -217 kcal/n	ol,	
C <sub>4</sub> H <sub>5</sub> N <sub>3</sub> +							
NN CH3	(≤9.7) IP from 83GLE/SI		(≤1311)	90	375	*EST	77202-08-5
N N N N CH3	(9.1) IP is onset of phot		(1258) and (83GLE/SP	91 'A).	380	*EST	86402-30-4

Table 1. Positive Ion Table - Continued

	Labic	1. 1 03111	e ion lable	- Continu			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne-		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>5</sub> N <sub>3</sub> +							
ON CH3	(8.6) IP is onset of pho	(268) toelectron t	(1123) pand.	70	293	*EST	24108-33-6
H3C N	(≤9.31)	(≤285)	(≤1191)	70	293	*EST	21134-95-2
H3C N .	(≤9.35)	(≤286)	(≲1195)	70	293	*EST	21134-96-3
C <sub>4</sub> H <sub>5</sub> N <sub>3</sub> O +			<del> </del>		<del></del>		
O NH2	(8.45)	(181)	(756)	−14±2	-59±10	80SAB2	71-30-7
C <sub>4</sub> H <sub>5</sub> O +							
0 H <sub>2</sub>	From proton affir	165 nity of furan	691 (RN 110-00-9)	. PA = 192.2	kcal/mol, 804	kJ/mol.	
$C_4H_5O_2^+$ $CH_3C(OH)=CHCO$	Prom appearance	110 potential o	461 f 10.24 eV in C	H <sub>3</sub> COCH <sub>2</sub> CO	СН <sub>3</sub> .		43115-54-4
C <sub>4</sub> H <sub>5</sub> S +							
S H2	From proton affir PA = 195.8 kcal/s			02-1) (86MAU	, 84LIA/LIE)		
$\frac{C_4H_6^+}{CH_2=C=CHCH_3}$	(9.03)	(247)	(1033)	38.8±0.1	162.3±0.5	77PED/RYL	590-19-2

Table 1. Positive Ion Table - Continued

			ve Iuli Table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(No		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>6</sub> <sup>+</sup> CH <sub>3</sub> C≡CCH <sub>3</sub>	9.562±0.005	255.2	1068	34.7±0.2	145.4±0.8	77PED/RYL	503-17-3
	9.43	255	1067	37.5±0.4	156.7±1.5	77PED/RYL	822-35-5
CH <sub>2</sub>	(9.57) See also: 81KIM/F	(269) KAT.	(1124)	48±0.5	201±2	77PED/RYL	6142-73-0
$\Diamond$	8.700±0.005 IP from 83BOM/I	253 DAN3.	1057	51.9±0.2	217.2±0.8	77PED/RYL	157-33-5
C <sub>4</sub> H <sub>6</sub> Cl <sub>2</sub> Si <sup>+</sup> CH <sub>2</sub> = CHSiCl <sub>2</sub> CH = CH <sub>2</sub>		(≤192) YK.	(≤802)	-57	-240	*EST	1745-72-8
CISCI	≤9.65 See also: 81KHV/2		(≤598)	-80	-333	*EST	872-46-8
C <sub>4</sub> H <sub>6</sub> F <sub>3</sub> O <sub>2</sub> + CF <sub>3</sub> C(OH)OC <sub>2</sub> H <sub>5</sub>	From proton affini 772. kJ/mol.		-284 OOC <sub>2</sub> H <sub>5</sub> (RN 38	33-63-1). PA	A = 184.6 kcal/m	ol,	•
C <sub>4</sub> H <sub>6</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> CCN	(8.2) IP is onset of photo	(229) Delectron ba	(960) and.	40.3±2.2	168.6±9.2	82MCM/GOL	3225-31-8
H <sub>N</sub> H <sub>2</sub>	From proton affini 868 kJ/mol.	184 ty of pyrrol	769 e (RN 109-97-7).	PA = 207.	6 kcal/mol,		
(CN) H+	From proton affini 817.5 kJ/mol.	214 ty of cyclop	895 ropylcarbonitrile	(RN 5500-2	1-0). PA = 195.	4 kcal/mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry
C <sub>4</sub> H <sub>6</sub> NO <sub>2</sub> + (NCCOOC <sub>2</sub> H <sub>5</sub> )H	From proton affin	134	562	<del></del> .		<del>-</del> ,,,,,	
C <sub>4</sub> H <sub>6</sub> N <sub>2</sub> +  N CH <sub>3</sub>	(≤8.66)	≤236	≤986	36	150	*EST	616-47-7
H3C	(≤8.50)	≤225	≤942	29	122	•EST	693-98-1
C <sub>4</sub> H <sub>6</sub> N <sub>2</sub> S <sup>+</sup> N — N — CH <sub>3</sub> SH	≤9.1 IP from 83GUI/PI	(≤265) FI.	(≤1107)	55	229	*EST	
CH <sub>3</sub> N—N SH	(≤8.6) IP from 83GUI/PI	(≤251) FI.	(s1049)	52	219	*EST	79208-64-3
C <sub>4</sub> H <sub>6</sub> N <sub>3</sub> O <sup>+</sup> NH <sub>2</sub> NH <sub>2</sub> NH <sup>+</sup>	From proton affin 936. kJ/mol.	128 ity of cytosii	535 ne (RN 71-30-7	). PA = 223.	8 kcal/mol,		
$C_4H_6O^+$ $C_2H_5CH=C=O$	8.80 IP from 81BOC/H	(171) IIR.	(714)	-32	-135	*EST	20334-52-5
$(CH_3)_2C = C = O$	(8.45) IP from 81BOC/H	(163) IIR.	(681)	-32±1	-134±4	80DEM/WUL	598-26-5
(E)-CH <sub>3</sub> CH = CHCHO	9.73±0.01 See also: 78VAN/0	200 OSK.	835	-24.8±0.4	-103.6±1.5	79VAJ/HAR	4170-30-3
CH <sub>2</sub> = C(CH <sub>3</sub> )CHO	(9.86) IP from 86HOL/L	(199) .OS.	(834)	-28	-117	79VAJ/HAR	78-85-3

Table 1. Positive Ion Table - Continued

			ve full Tab				
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>6</sub> O <sup>+</sup>							
CH <sub>2</sub> =CHCOCH <sub>3</sub>	9.64 See also: 80TER/	(189) HEE, 82MO	(792) OR/MER.	-33	-138	79VAJ/HAR	78-94-4
CH <sub>3</sub> C≖COCH <sub>3</sub>	(8.79) IP from 86HOL/	(206) LOS.	(860)	2.9	12.1	*EST	13169-01-2
CH <sub>2</sub> = CHCH = CHOH(E)	(8.51±0.03) IP from 86TUR/I	(175) HAV, 86TU	(733) R/HAV3. Se	−21±1 c also: 80TER/H	-88±5 EE.	86TUR/HAV	70411-98-2
CH <sub>2</sub> =CHCH=CHOH(Z)	(8.47±0.03) IP from 86TUR/F	(174) HAV. 86TU	(728) R/HAV3. Se	-21±2 e also: 80TER/F	-89±9 IEE.	86TUR/HEE	70415-58-6
$CH_2 = C = CHCH_2OH$	(8.74) IP from 80TER/F	(206)	(861)	4.3	18.0	*EST	18913-31-0
HC≖CCH <sub>2</sub> CH <sub>2</sub> OH	(9.66) IP from 86HOL/I	(226) LOS.	(945)	3.2	13.4	*EST	927-74-2
CH <sub>3</sub> C≡CCH <sub>2</sub> OH	(9.78) IP from 86HOL/I	(227) LOS.	(948)	1.1	4.6	*EST	764-01-2
η- η- η- η- η- η- η- μο≡ссн(сн₃) ο н	(10.15)	(236)	(987)	2	8	*EST	2028-63-9
CH <sub>2</sub> =CHC(OH)=CH <sub>2</sub>	8.68±0.03 ∆ <sub>f</sub> H(Ion) from ap	182 opearance p	761 otential deter	-18 mination(80TE)	-76 R/HEE). IP (	84TUR From 84TUR.	59120-04-6
$CH_2 = C = CHOCH_3$	(8.64) IP from 86HOL/I	(207) JOS, onset o	(866) of photoelect	7.7 ron band (86KA	32.2 M/BOS).	*EST	13169-00-1
нс≡ссн <sub>2</sub> осн <sub>3</sub>	(9.78) IP from 86HOL/I	(240) LOS.	(1005)	14.7	61.5	*EST	627-41-8
CH <sub>2</sub> = CHOCH = CH <sub>2</sub>	(8.7) $\Delta_f H(\text{Ion})$ from an IP is $\Delta_f H(\text{Ion})$ - $\Delta_f H(\text{Ion})$			-3 mination (81HC	-13 DL/BUR).	*EST	109-93-3
$\bigcirc$	9.14±0.02	195	816	-16±1	−66±3	81ALL/GLA	1708-29-8
0	9.354	(194)	(814)	-21	-89	*EST	1191-95-3

Table 1. Positive Ion Table - Continued

	Table	I. Posiți	ve Ion Table	- Contin	uea —————————		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>6</sub> O <sup>+</sup>							
О Сн=сн <sub>2</sub>	9.52 IP from 86HOL/L	(222) .OS.	(928)	2	10	*EST	930-22-3
C <sub>4</sub> H <sub>6</sub> OSi <sup>+</sup>							
SiH <sub>3</sub>	(<8.0) IP is onset of photon	(<183) toelectron t	(<765) pand (83ZYK/EI	−2 RC).	<b>-7</b> ,	*EST	73726-79-1
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub> +							
(Z)-CH <sub>3</sub> CH = CHCOOH	(10.08)	(150)	(626)	-83	-346	*EST	503-64-0
(E)-CH <sub>3</sub> CH = CHCOOH	(9.9)	(145)	(605)	-84	-350	*EST	107-93-7
	IP is onset of pho					201	107-33-7
CH <sub>2</sub> =CHCH <sub>2</sub> COOH	(9.75) IP is onset of photon	(141)	(589) pand (81MOH/H	~84 IR)	-352	*EST	625-38-7
CH <sub>2</sub> =C(CH <sub>3</sub> )COOH	(10.15)	(146)	(610)	-88	-369	84BOU/HOP	79-41-4 3724-65-0
CH <sub>3</sub> CO <sub>2</sub> CH = CH <sub>2</sub>	9.19 "Doubtful" IP valu J. Quant. Spectros onset of photoelec	sc. Radiat.	Fransfer 2, 369 (1	T. Nakayam 962) is in go	od agreement wi		108-05-4
CH <sub>2</sub> =CHCOOCH <sub>3</sub>	(9.9) IP is onset of photon	(154) coelectron t	(643) pand (78VAN/OS	-75 SK). See also	-312 o: 82LEV/LIA.	80VIL/PER	96-33-3
(CH <sub>3</sub> CO) <sub>2</sub>	9.24±0.04 See also: 80VON/	135 BIE, 81KIN	564 //KAT.	-78.2±0.3	-327.1±1.1	77PED/RYL	431-03-8
	(9.5) IP is onset of phot	(224) coelectron t	(938) pand (81KIM/KA	5 T).	21	*EST	18715-02-1
$\binom{\circ}{\circ}$	(8.07±0.02)	(131)	(549)	-55	-230	*EST	543-75-9

Table 1. Positive Ion Table - Continued

YON				1			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>4</sub> H <sub>6</sub> O <sub>2</sub> + соон	10.64	(167)	(699)	-78	-328	*EST	1759-53-1
$C_4H_6O_2S^+$ (CH <sub>2</sub> =CH) <sub>2</sub> SO <sub>2</sub>	10.59±0.03	208	871	-36±0.9	-151±4	77PED/RYL	77-77-0
$\bigcirc$ so <sub>2</sub>	(10.0) IP is onset of pho	(169) toelectron b	(709) and (82LEV/LIA	-61±0.7 A, 84AIT/G0	−256±3 OS).	77PED/RYL	77-79-2
C <sub>4</sub> H <sub>6</sub> O <sub>3</sub> + (CH <sub>3</sub> CO) <sub>2</sub> O	(10.0) IP is onset of phot	(95) toelectron b	(398) and (81BOC/HII		3 −567.3±1.3	77PED/RYL	108-24-7
H <sub>3</sub> C 0 0	(10.52)	(103)	(432)	-139±0.5	-583±2	77PED/RYL	108-32-7
С <sub>4</sub> H <sub>6</sub> O <sub>4</sub> + сн <sub>3</sub> ососоосн <sub>3</sub>	(10.0) IP is onset of phot	(69) coelectron ba	(289) and.	-162	-676	76ANT/CAR	553-90-2
$C_4H_6S^+$ $(CH_2=CH)_2S$	(8.25±0.01)	(232)	(970)	42±2	174±9	*EST	627-51-0
s	(8.4) IP is onset of phot	(215) oelectron ba	(897) and.	20.8±0.3	87.0±1.1	81KUD/KUD3	1708-32-3
C <sub>4</sub> H <sub>6</sub> S <sub>2</sub> + CH <sub>3</sub> SC≡CSCH <sub>3</sub>	(7.8) IP is onset of phot	(238) oelectron ba	(995) and (81BOC/RIE	58 E).	242	*EST	59507-56-1
H <sub>3</sub> C S I	(8.0) IP is onset of pho	(231) toelectron b	(966) and (83SCH/SCI	46 A).	194	*EST	74378-81-7

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Table	e - Contir	nued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>6</sub> S <sub>3</sub> +							
	(8.2) IP is onset of photon	(208) toelectron	(869) band.	19±0.7	78±3	77PED/RYL	1748-15-8
C. H. +	······································	·					
$C_4H_7^+$ $CH_3CHCH=CH_2$	(7.49±0.02)	202 206	845 <i>863</i>	31.7 35.7	132.6 149.4	87LIA/AUS	65338-31-0
	IP from 84SCH/H 1,3-butadiene (RN					US). See also: 86TRA	A.
$CH_2C(CH_3) = CH_2$	7.90±0.02 IP from 84SCH/H	(211) OU2.	(883)	29	121	87LIA/AUS	15157-95-6
(	+ From proton affin (862) kJ/mol.	(218) lity of 1-m	(912) ethylcycloprope	ne (RN 3100-0	04-7). PA = (7	206) kcal/mol,	65338-31-0
СН <sub>3</sub> ССНСН <sub>3</sub>	From proton affin	-	-				
CH <sub>2</sub> =CHCH <sub>2</sub> CH <sub>2</sub>	PA = 188 kcal/mo 8.04 IP from 84SCH/H	(231)	(968)	JS). 46	191	84SCH/HOU2	2154-62-3
( H <sup>†</sup>	7.54±0.02 IP from 84SCH/H (RN 822-35-5) = 2			51.2 formed by pro	214.2 otonation of cy	82MCM/GOL clobutene	4548-06-5
C <sub>4</sub> H <sub>7</sub> F <sub>3</sub> O + CF <sub>3</sub> CH <sub>2</sub> OC <sub>2</sub> H <sub>5</sub>	10.27	(21)	(86)	-216	-905	*EST	461-24-5
	IP from 83MOL/F	PIK.					
С <sub>4</sub> Н <sub>7</sub> IO <sub>2</sub> <sup>+</sup> Сн <sub>3</sub> Снісоосн <sub>3</sub>	(9.1) IP from 83BUR/H	(122) IOL3.	(510)	-88	-368	*EST	56905-18-1
C <sub>4</sub> H <sub>7</sub> N <sup>+</sup>							
n-C <sub>3</sub> H <sub>7</sub> CN	(11.2) IP is onset of photon	(266) coelectron	(1112) band (840HN/	7 MAT, 81KIM	31 /KAT). See als	82CHU/NGU o: 82CHE/LAP.	109-74-0
n-C <sub>3</sub> H <sub>7</sub> NC	(11.8) IP from 82CHE/L	(302) AP.	(1262)	29.5	123.4	*EST	627-36-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(\text{Ion})$ $\Delta_f H(\text{Neutral})$ Neutral CAS regis									
Neutral	eV	kcal/mol		kcal/mol		reference	number			
C <sub>4</sub> H <sub>7</sub> N <sup>+</sup> iso-C <sub>3</sub> H <sub>7</sub> CN	(11.3) IP is onset of pho	(266) toelectron b	(1115) and (840HN)	5.8±0.2 /MAT, 81KIM/	24.5±0.7 KAT).	77PED/RYL	78-82-0			
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(8.0) IP is onset of pho	(210) toelectron b	(882) and.	26±0.7	110±3	*EST	109-96-6			
	(8.2) IP from 81MUL/I	(251) PRE.	(1048)	61	257	*EST				
C <sub>4</sub> H <sub>7</sub> NO +	(9.2) IP is onset of phot	(161) toelectron b	(675) and (80AND/	-51 /DEV).	-213	77PED/RYL	616-45-5			
C <sub>4</sub> H <sub>7</sub> NO <sub>2</sub> + CH <sub>2</sub> =CHCH <sub>2</sub> CH <sub>2</sub> ONO	(9.7) IP is onset of phot	(224)	(939) and.	0.7	3	*EST	67428-02-8			
C <sub>4</sub> H <sub>7</sub> NO <sub>3</sub> + CH <sub>3</sub> CONHCH <sub>2</sub> COOH	(9.4) IP is onset of phot	(72) toelectron b	(303) and (83CAN/	-144 HAM).	-604	*EST	543-24-8			
C <sub>4</sub> H <sub>7</sub> NS <sup>+</sup>	(8.14) IP is onset of phot	(192) coelectron b	(801) and (80AND/	4 DEV).	16	•EST	2295-35-4			
C <sub>4</sub> H <sub>7</sub> NSe <sup>+</sup>	7.6 IP is onset of phot	(196) oelectron ba	(819) and (80AND)	21 DEV).	86	*EST	23164-74-1			

Table 1. Positive Ion Table - Continued

			ve foll Table	- Contin			
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>7</sub> N <sub>2</sub> +  C <sub>4</sub> H <sub>7</sub> N <sub>2</sub> +  C <sub>4</sub> H <sub>3</sub> N N N	Prom proton affi 958. kJ/mol.	(173) nity of 1-me	(723) thylimidazole	(RN 616-47-7).	PA = 228.9	kcal/mol,	
H3C H	From proton affi 939. kJ/mol.	(170) nity of 4-me	(713) thylimidazole (	(RN 822-36-6).	PA = 224.4	kcal/mol,	
C <sub>4</sub> H <sub>7</sub> N <sub>3</sub> S +		···-	· · · · · · · · · · · · · · · · · · ·				
NN     NSCH <sub>3</sub>	≤8.33 IP from 83GUI/F	(≤250) PFI.	(≤1047)	58	243	•EST	36811-14-0
N — N — SCH <sub>3</sub>	≤8.65 IP from 83GUI/F	(≤258) °FI.	(≤1077)	58	243	*EST	35262-23-8
H <sub>3</sub> C CH <sub>3</sub>	(7.4) IP from 83GUI/F	(259) PFI.	(1084)	88	370	*EST	64808-28-2
O. IV. 0.4			<del></del>				
C <sub>4</sub> H <sub>7</sub> O <sup>+</sup> (E)-CH <sub>3</sub> CHCHCHOH							
-	From proton affin 835.5 kJ/mol.	141 nity of (E)-C	591 CH <sub>3</sub> CH = CHC	CHO (RN 4170	-30-3). PA =	• 199.7 kcal/mol,	
сн <sub>2</sub> с(сн <sub>3</sub> )снон	From proton affii 817. kJ/mol.	142 nity of CH <sub>2</sub>	596 = C(CH <sub>3</sub> )CH(	O (RN 78-85-3)	. PA = 195.	2 kcal/mol,	
СН <sub>2</sub> СНС(ОН)СН <sub>3</sub>	From proton affir 838. kJ/mol.	133 nity of CH <sub>2</sub>	554 = CHCOCH <sub>3</sub>	(RN 78-94-4).	PA = 200.2	kcal/mol,	
	From proton affii PA = 206.8 kcal/			N 1191-99-7) (	86BOU/DJA	s).	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry
C <sub>4</sub> H <sub>7</sub> O +							
	From proton affir PA = 198.4 kcal/			RN 1708-29-8) (	86BOU/DJA	).	
$C_4H_7O_2^+$ (Z)-CH <sub>3</sub> CH = CHC(OH) <sub>2</sub>							
	From proton affin PA = 199.7 kcal/			COOH (RN 50:	3-64-0)(84BO	U/HOP).	
CH <sub>3</sub> C(CH <sub>2</sub> )C(OH) <sub>2</sub>	From proton affir PA = 196.8 kcal/	_	-	OH (RN 3724-6	55-0)(84BOU/	/HOP).	
CH <sub>2</sub> =CHC(OH)OCH <sub>3</sub>	$\Delta_{ m f}  extit{ extit{H}}$ (Ion) from a	92 opearance po	386 stential deter	nination (83BU	JR/HOL3).		
сн <sub>3</sub> со <sub>2</sub> снсн <sub>3</sub>	From proton affir 823. kJ/mol.	94 nity of CH <sub>3</sub> C	392 O <sub>2</sub> CH = CH <sub>2</sub>	(RN 108-05-4	) (86MAU). 1	PA = 196.7 kcal/m	ol,
сн <sub>3</sub> снсоосн <sub>3</sub>	$\Delta_{ m f} H$ (Ion) from ap	115 opearance po	480 stential deteri	nination (83BL	JR/HOL3).		
СН3СОС(ОН)СН3	From proton affir	93 hity of (CH <sub>3</sub> (	388 CO) <sub>2</sub> (RN 43)	1-03-8). PA =	194.8 kcal/mo	ol, 815. kJ/mol.	
°.	From proton affir PA = 198.4 kcal/r			RN 543-75-9) (	86BOU/HAN	v).	
OCH <sub>3</sub>	$\Delta_{\mathrm{f}}H$ (Ion) from ap	108 pearance po	450 tential deterr	nination (83BL	JR/HOL3).		
C <sub>4</sub> H <sub>7</sub> O <sub>3</sub> P <sup>+</sup>			· · · · · · · · · · · · · · · · · · ·	- · · · · · · · · · · · · · · · · · · ·			
0 p.20	(9.42±0.1)	(89)	(371)	-129	-538	*EST	280-45-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>7</sub> S <sup>+</sup>							
< <u>\$</u> `.	Δ <sub>f</sub> H(Ion) from a	237 <i>214</i> ppearance po	992 <i>895</i> otential in tet	rahydrothiophe	ne (83BUT/B	AE2).	39925-70-7
	·						
С <sub>4</sub> Н <sub>8</sub> <sup>+</sup>							
1-C <sub>4</sub> H <sub>8</sub>	9.58±0.02 See also: 83HOL	221 /LOS, 86TR.	924 A.	-0.1±0.1	-0.4±0.5	77PED/RYL	106-98-9
(Z)-2-C <sub>4</sub> H <sub>8</sub>	9.108±0.008 IP from 78LIA/A	208 US. See also	871 : 81KIM/KA	−1.9±0.1 Γ, 86TRA.	-7.8±0.5	77PED/RYL	590-18-1
(E)-2-C <sub>4</sub> H <sub>8</sub>	9.100±0.008 IP from 78LIA/A	207 US. See also	866 : 81KIM/KA	~2.9±0.2 Г, 86TRA.	-12.2±0.5	77PED/RYL	624-64-6
iso-C <sub>4</sub> H <sub>8</sub>	9.239±0.003 See also: 83HOL	209 LOS, 81KIN	874 1/KAT, 86TR	-4.0±0.1 A.	-16.9±0.6	77PED/RYL	115-11-7
	(9.92±0.05)	(235)	(985)	6.8±0.2	28.4±0.5	77PED/RYL	287-23-0
CH <sub>3</sub>	(9.46)	(224)	(938)	5.5	23	77PED/RYL	594-11-6
C <sub>4</sub> H <sub>8</sub> Br <sub>2</sub> +			·····		<del>***</del> .		
CH <sub>3</sub> CHBrCHBrCH <sub>3</sub> -(R,R	(±)) (≤10.12)	(≤206)	(≤860)	-28	-116	*EST	598-71-0
CH <sub>3</sub> CHBrCHBrCH <sub>3</sub> -(R,S)	(≤10.16)	(≤207)	(≤864)	-28	-116	*EST	5780-13-2
BrCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> Br	(10.15) IP from 77STA/W	(210) 71E.	(880)	-24	-99	77PED/RYL	110-52-1
CH2CH2CH2CH2NH2							
CF <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(9.1) IP from 79AUE/F	(29) 3OW.	(123)	-180	-755	*EST	819-46-5
(CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> CF <sub>3</sub>	(8.42) IP from 81LOG/I	(27) AK. See alse	(112) o: 79AUE/BO	−167 DW.	-700	81LOG/TAK	819-06-7

Table 1. Positive Ion Table - Continued

	1 abie .	I. Posi	tive Ion Tabl	e - Con	inuea		
ION Neutral	Ionization potential eV		((Ion) ol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>8</sub> F <sub>3</sub> O <sup>+</sup> C <sub>2</sub> H <sub>5</sub> OHCH <sub>2</sub> CF <sub>3</sub>	From proton affin 780. kJ/mol.	-37 ity of C <sub>2</sub>	~154 H <sub>5</sub> OCH <sub>2</sub> CF <sub>3</sub> ()	RN 461-24-5	). PA = 186.41	kcal/mol,	
C4H8N+							
n-C <sub>3</sub> H <sub>7</sub> CNH	From proton affin	179 ity of n-0	751 C <sub>3</sub> H <sub>7</sub> CN (RN 10	9-74-0). PA	= 193.7 kcal/n	nol, 810. kJ/mol.	
i-C <sub>3</sub> H <sub>7</sub> CNH	From proton affin	177 ity of i-C	740 3H <sub>7</sub> CN (RN 78	-82-0). PA =	= 194.3 kcal/mo	i, 813. kJ/mol.	
i-C <sub>3</sub> H <sub>7</sub> NCH	From proton affin 862. kJ/mol.	186 ity of i-C	778 3H <sub>7</sub> NC (RN 598	8-45-8) (86M	IAU/KAR). PA	A = 206. kcal/mol,	
C <sub>4</sub> H <sub>8</sub> NO <sub>4</sub> + HOOCCH <sub>2</sub> CH(NH <sub>3</sub> )COC	ЭН						
	From proton affin 907. kJ/mol.	-44 ity of L-a	−184 aspartic acid (RI	N 617-45-8).	PA = 216.7 kca	al/mol,	
C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> CN	(8.72±0.05) See also: 83MOL/	(228) PIK2.	(953)	27	112	*EST	926-64-7
C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> OS <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NCSOCNH <sub>2</sub>	(≤8.21) IP from 81HEN/IS	(≤171) SA.	(≤714)	-19	-78	*EST	41168-96-1
(CH <sub>3</sub> ) <sub>2</sub> NCOCSNH <sub>2</sub>	≤8.37 IP from 81HEN/IS	(≤168) SA.	(≤704)	-25	-104	*EST	18138-14-2
C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> O <sub>2</sub> + CH <sub>3</sub> NHCOCONHCH <sub>3</sub>	(9.33)	(121)	(504)	-95	-396	*EST	615-35-0
C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> S +							
HN CH3	(7.7) IP is onset of photo	(201) pelectron	(842) n band (80AND)	24 /DEV).	99	*EST	13431-10-2
C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> S <sub>2</sub> + CH <sub>3</sub> NHCSCSNHCH <sub>3</sub>	≤8.23 IP from 81HEN/IS	(≤163) A.	(≤684)	-26	`~110	*EST	120-79-6
$C_4H_8N_4^+$ $NCN = C(NHCH_3)_2$	(8.5) IP is onset of photo	(234) pelectron	(977) a band (80KLA/	38 BUT).	157	*EST	31857-31-5

Table 1. Positive Ion Table - Continued

	Table 1	1. Positiv	e Ion Table	- Continu	1ed		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Net		Neutral reference	CAS registry number
С <sub>4</sub> H <sub>8</sub> O <sup>+</sup> n-С <sub>3</sub> H <sub>7</sub> CHO	9.84±0.02 See also: 81ELS/A	177 ALL, 83MC	742 A/HUD, 81KI		−207.5±1.5 A/MCA.	77PED/RYL	123-72-8
iso-C <sub>3</sub> H <sub>7</sub> CHO	9.705±0.005 See also: 83MCA/	172 HUD, 86T	721 RA/MCA.	-51.5±0.1	-215.6±0.6	77PED/RYL	78-84-2
С₂н₅сосн₃ .	9.51±0.04 See also: 72POT/5	162 SOR, 85TR	677 A, 81KIM/KA'		-240.8±0.6	77PED/RYL	78-93-3
CH <sub>3</sub> CH <sub>2</sub> CH = CHOH	(8.34±0.05) Δ <sub>f</sub> H(Ion) from ap (83HOL/LOS). S			-42 ninations. IP is	–177 s Δ <sub>f</sub> H(Ion) - Δ	*EST a <sub>f</sub> H(Neutral)	56640-69-8
(E)-CH <sub>3</sub> CH = CHCH <sub>2</sub> OF	I (9.13±0.02) IP from 86TRA/N	(173) ICA. See a	(726) Iso: 83MCA/H	-37 IUD.	-155	*EST	
CH <sub>2</sub> =CHCH <sub>2</sub> CH <sub>2</sub> OH	(9.56±0.05) IP from 83HOL/I	(184) LOS.	(770)	-36	-152	*EST	627-27-0
сн₃снсн₂снон	Based on appeara	(165) ance energy	(690) measurements	of metastable	processes (83)	MCA/HUD).	
$CH_2 = C(CH_3)CH_2OH$	(9.26±0.02) IP is average of va	(176) alues from 8	(734) 33HOL/LOS a	-38 nd 86TRA/MC	-159 CA.	*EST	513-42-8
(CH <sub>3</sub> ) <sub>2</sub> C = CHOH	(8.27±0.05) Δ <sub>f</sub> H(Ion) from a <sub>f</sub> IP is Δ <sub>f</sub> H(Ion) - Δ				-192	*EST	56640-70-1
СН <sub>2</sub> СН(СН <sub>3</sub> )СНОН	Based on appeara	(154) ance energy	(644) measurements	s of metastable	processes (83)	MCA/HUD).	
$CH_3CH_2C(OH) = CH_2$	(8.36±0.05) ∆ <sub>f</sub> H(Ion) from a <sub>I</sub> IP is ∆ <sub>f</sub> H(Ion) - <i>I</i>				-179 BMCA/HUD.	•EST	61923-55-5
CH <sub>3</sub> C(OH) = CHCH <sub>3</sub>	$\Delta_{ extstyle f} H$ (Ion) from a	139 ppearance p	581 potential determ	minations. See	also: 83MCA	HUD.	21411-38-1
CH <sub>2</sub> = CHCH(OH)CH <sub>3</sub>	9.50±0.05 IP from 83MCA/I	(180) HUD, 83H	(756) OL/LOS, 86TF	-38 RA/MCA.	-161	*EST	598-32-3
CH <sub>3</sub> C(OH)CH <sub>2</sub> CH <sub>2</sub>	Based on appeara	(147) ance energy	(613) measurements	s of metastable	processes (83	MCA/HUD).	
CH <sub>2</sub> =CHCH <sub>2</sub> OCH <sub>3</sub>	(9.56) IP from 86HOL/I	(195) LOS.	(817)	-25	-105	*EST	627-40-7

Table 1. Positive Ion Table - Continued

<u></u>	Table	1. 1 03101	e ion labie ·	Contin	<del>aca</del>		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>8</sub> O + CH <sub>2</sub> =CHOC <sub>2</sub> H <sub>5</sub>	(8.8) IP from 86HOL/	(169) LOS. See als	(708) so: 82MOR/MER	-34	-141	77PED/RYL	109-92-2
CH <sub>2</sub> = C(CH <sub>3</sub> )OCH <sub>3</sub>	(8.64) IP from 82HOL/	(164) LOS2.	(688)	-35	-146	*EST	116-11-0
ightharpoonup	9.41±0.02 See also: 81KIM/	173 KAT.	724	-44.0±0.2	-184.2±0.7	77PED/RYL	109-99-9
ОН	9.25 IP from 83MCA/	(181) HUD, 86TR	(756) A/MCA.	-32	-136	•EST	2919-23-5
О СН <sub>3</sub>	(10.00)	(198)	(830)	-32	-135	•EST	558-30-5
н <sub>3</sub> ссн <sub>3</sub>	(9.98)	(199)	(832)	-31	-131	*EST	21490-63-1
<mark>0</mark> с <sub>2</sub> н <sub>5</sub>	(10.15)	(206)	(864)	~28	-115	*EST	106-88-7
C <sub>4</sub> H <sub>8</sub> OS <sup>+</sup> CH <sub>3</sub> COSC <sub>2</sub> H <sub>5</sub>	(9.2) IP is onset of pho	(158) toelectron b	(660) and.	−54±0.2	−228±1	66WAD	625-60-5
$\binom{\circ}{s}$	(8.67)	(164)	(688)	-36	-149	*EST	15980-15-1
S=0	8.5 IP is onset of pho	(161) toelectron b	(674) and.	-35	-146	*EST	1600-44-8

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Table	e - Contin	ued		
ON Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) I kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
4H <sub>8</sub> O <sub>2</sub> +		· · · · · · · · · · · · · · · · · · ·					
n-C <sub>3</sub> H <sub>7</sub> COOH	10.17±0.05	121 <i>127</i>	507 <i>5</i> 33	-113±1 -107	-473±4 -447	82BUT/FRA	107-92-6
•	See also: 82BUT/	FRA, 81H	OL/FIN.				
iso-C <sub>3</sub> H <sub>7</sub> COOH	10.33±0.03	(123)	(517)	-115	-480	*EST	79-31-2
нсоосн <sub>2</sub> сн <sub>2</sub> сн <sub>3</sub>	10.52±0.02	132	553	-110	-462	77PED/RYL	110-74-7
нсоосн(сн <sub>3</sub> ) <sub>2</sub>	10.44±0.05	(144)	(602)	<del>-</del> 97	-405	*EST	625-55-8
СH <sub>3</sub> СООС <sub>2</sub> H <sub>5</sub>	10.01±0.05	125	523		-443.9±0.4	77PED/RYL	141-78-6
	IP from 82FRA/F	<i>131</i> TRA2.	<i>5</i> 48	−99.9±0.1	-418.0±0.4		
С2Н5СООСН3	10.15±0.03	(131)	(547)	-103	-432	*EST	554-12-1
$CH_3CH_2CH = C(OH)_2$							
	From appearance	97 potential	405 of 10.14 eV in (	C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CHCO	OH (RN 88-09	-5).	12542-32-4
(CII ) C - C(OID	••	92	387	2 3.2			
(CH3)2C = C(OH)2	From appearance and 9.96 eV in n-0	potentials	of 10.02 eV in		COOH (RN 59	95-37-9)	
$CH_2 = C(OH)OC_2H_5$		104	433				
	From appearance and 9.96 eV in n-6	-		-	H <sub>5</sub> (RN 105-54	1-4)	
CH <sub>3</sub> CH = C(OH)OCH <sub>3</sub>							
	From appearance	99 potential	413 of 9.81 eV in se	c-C4HoCOOCI	H2 (RN 868-57	-5).	
					-		
CH <sub>3</sub> COCH <sub>2</sub> OCH <sub>3</sub>	≤9.66 IP from 84OLI/G	(≤143) UE.	(≤598)	-80	<b>-</b> 334	*EST	5878-19-3
Çφ	(≤10.0)	(≤195)	(≤816)	<b>-</b> 36	-149	*EST	5703-46-8
<b>८</b> ७	(2,010)	(220)	(200)		•••		
۲°>	9.8	145	608	-81±0.2	-338±1	82BYS/MAN	505-22-6
$^{\circ}$	9.8 See also: 84ASF/2		608	-81±0.2	-338±1	82BYS/M	AN

Table 1. Positive Ion Table - Continued

ION   Notified   Not	·		1. FUSILI	ve foil fable	- Contin	<u> </u>		
9.19±0.01 136 571 -75.5±0.2 -316.0±0.7 82BYS/MAN 123-91-1  144 692 -68.2±0.2 -285.5±0.8  IP from 82FRA/FRA. See also: 81KIM/KAT, 73GOL/KOR, 82BIE/ASB.  C4H8O2S+  (9.8) (138) (577) -88 -369 *EST 126-33-0  IP is onset of photoelectron band. See also: 84ATI//GOS.  (9.5) (142) (593) -77 -324 *EST 54697-52-8  IP is onset of photoelectron band.  C4H8O3+  (CH3)2COHCOOH s10.9 (596) (5404) -155 -648 *EST 594-61-6  IP from 73GOL/KOR.  C4H8O3P+  Opto PA = 207.1 kcal/mol, 866.5 kJ/mol.  C4H8O4+  (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H8O4+  H3C-C-0-H0-CCH3 (510.6) (522) (594) -222 -929 *EST 693-75-5  C4H8O7-5-8  C4H8O7-5-8  C4H8O7-5-8  C4H8O7-5-8  C4H8O7-5-8  C4H8O7-5-8  C4H8O7-5-8  C4H8O7-5-8  C5-10-10-10-10-10-10-10-10-10-10-10-10-10-					-			
9.19±0.01 136 571 -75.5±0.2 -316.0±0.7 82BYS/MAN 123-91-1  144 692 -68.2±0.2 -285.3±0.8  IP from 82FRA/FRA. See also: 81KIM/KAT, 73GOL/KOR, 82BIE/ASB.  C4H8O2S+  (9.8) (138) (577) -88 -369 *EST 126-33-0  IP is onset of photoelectron band. See also: 84ATI/GOS.  (9.5) (142) (593) -77 -324 *EST 54697-52-8  IP is onset of photoelectron band.  C4H8O3+  (CH3)2COHCOOH s10.9 (596) (3404) -155 -648 *EST 594-61-6  IP from 73GOL/KOR.  C4H8O3P+  Opto Pa = 207.1 kcal/mol, 866.5 k1/mol.  C4H8O4+  From proton affinity of 2.6,7-trioxa-1-phosphabicyclo[2.2.2]octane (RN 280-45-5).  PA = 207.1 kcal/mol, 866.5 k1/mol.  C4H8O4+  H3C-C-OHOCH3 (310.6) (322) (594) -222 -929 *EST 693-75-5  C4H8O4+  C4H8O4-	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> +							
(9.8) (138) (577) -88 -369 *EST 126-33-0  IP is onset of photoelectron band. See also: 84AIT/GOS.  (9.5) (142) (593) -77 -324 *EST 54697-52-8  IP is onset of photoelectron band.  C4H8O3 + (CH3)2COHCOOH s10.9 (596) (5404) -155 -648 *EST 594-61-6  IP from 73GOL/KOR.  C4H8O3P+  30 126  From proton affinity of 2,67-trioxa-1-phosphabicyclo[2,2,2]octane (RN 280-45-5).  PA = 207.1 kcal/mol, 866.5 kJ/mol.  C4H8O4 + (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H8O4 + (310.6) (522) (594) -222 -929 *EST 6993-75-5  C4H8O4 + (310.6) (522) (594) -222 -929 *EST 6993-75-5			144	602	-68.2±0.2	-285.3±0.8	82BYS/MAN	123-91-1
P is onset of photoelectron band. See also: 84AIT/GOS.  (9.5) (142) (593) -77 -324 *EST 54697-52-8  IP is onset of photoelectron band.  C4H8O3 + (CH3)2COHCOOH s10.9 (596) (5404) -155 -648 *EST 594-61-6  IP from 73GOL/KOR  C4H8O3P + 30 126  From proton affinity of 2,6,7+trioxa-1-phosphabicyclo[2.2.2]octane (RN 280-45-5). PA = 207.1 kcal/mol, 866.5 kJ/mol.  C4H8O4 + (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H8O4 + (S10.6) (522) (594) -222 -929 *EST 6993-75-5  C4H8S + (CH3SCH2CH=CH2 8.6 (210) (880) 12±2 50±9 *EST 10152-76-8	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> S <sup>+</sup>		· · · · · · · · · · · · · · · · · · ·					
TP is onset of photoelectron band.  C4H8O3 + (CH3)2COHCOOH ≤10.9 (≤96) (≤404) −155 −648 *EST 594-61-6  IP from 73GOL/KOR.  C4H8O3P+  30 126  From proton affinity of 2,6,7-trioxa-1-phosphabicyclo[2.2.2]octane (RN 280-45-5).  PA = 207.1 kcal/mol, 866.5 kJ/mol.  C4H3  13 55  From proton affinity of 4-methyl-2,6,7-trioxa-1-phosphabicyclo[2.2.1]heptane (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H8O4+  H3C−C  C4H8O4+  C4H8O4+  C4H8O4+  C4H8S+  CH3SCH2CH=CH2 8.6 (210) (880) 12±2 50±9 *EST 10152-76-8						-369	*EST	126-33-0
(CH <sub>3</sub> ) <sub>2</sub> COHCOOH  \$\frac{10.9}{1P}\$ (\$\frac{96}{1P}\$) (\$\frac{96}{1}\$) (\$\frac{404}{1}\$) -155 -648  *EST 594-61-6  1P from 73GOL/KOR.  \$\frac{126}{1P}\$ From proton affinity of 2,6,7-trioxa-1-phosphabicyclo[2.2.2] octane (RN 280-45-5).  PA = 207.1 kcal/mol, 866.5 kJ/mol.  \$\frac{CH_3}{P}\$ 13 55  From proton affinity of 4-methyl-2,6,7-trioxa-1-phosphabicyclo[2.2.1] heptane (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  \$\frac{C_4H_8O_4}{P}\$ + \frac{C_4H_8O_4}{O_{-HO}}\$ (\$\frac{10.6}{1}\$) (\$\frac{22}{2}\$) (\$\frac{94}{2}\$) -222 -929  *EST 6993-75-5  \$\frac{C_4H_8S^+}{CH_3SCH_2CH}\$ = CH <sub>2</sub> 8.6 (210) (880) 12\(\frac{12}{2}\$) 50\(\frac{1}{2}\$) \$\frac{1}{2}\$ 50\(\frac{1}{2}\$) *EST 10152-76-8	H <sub>3</sub> C CH <sub>3</sub>		• •		-77	-324	*est	54697-52-8
30 126 From proton affinity of 2,6,7-trioxa-1-phosphabicyclo[2.2.2]octane (RN 280-45-5). PA = 207.1 kcal/mol, 866.5 kJ/mol.  CH <sub>3</sub> 13 55 From proton affinity of 4-methyl-2,6,7-trioxa-1-phosphabicyclo[2.2.1]heptane (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H <sub>8</sub> O <sub>4</sub> +  H <sub>3</sub> C-C  O-HO  C-CH <sub>3</sub> (≤10.6) (≤22) (≤94) -222 -929 *EST 6993-75-5  C4H <sub>8</sub> S +  CH <sub>3</sub> SCH <sub>2</sub> CH = CH <sub>2</sub> 8.6 (210) (880) 12±2 50±9 *EST 10152-76-8				(≤404)	-155	-648	*EST	594-61-6
30 126 From proton affinity of 2,6,7-trioxa-1-phosphabicyclo[2.2.2]octane (RN 280-45-5). PA = 207.1 kcal/mol, 866.5 kJ/mol.  CH <sub>3</sub> 13 55 From proton affinity of 4-methyl-2,6,7-trioxa-1-phosphabicyclo[2.2.1]heptane (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H <sub>8</sub> O <sub>4</sub> +  H <sub>3</sub> C-C  O-HO  C-CH <sub>3</sub> (≤10.6) (≤22) (≤94) -222 -929 *EST 6993-75-5  C4H <sub>8</sub> S+  CH <sub>3</sub> SCH <sub>2</sub> CH = CH <sub>2</sub> 8.6 (210) (880) 12±2 50±9 *EST 10152-76-8	C <sub>4</sub> H <sub>8</sub> O <sub>3</sub> P <sup>+</sup>							
13 55 From proton affinity of 4-methyl-2,6,7-trioxa-1-phosphabicyclo[2.2.1]heptane (RN 61580-09-4). PA = 198.1 kcal/mol, 829. kJ/mol.  C4H8O4+  H3C-CO-HO-C-CH3  C4H8S+  CH3SCH2CH=CH2  8.6  (210)  (880)  12±2  50±9  *EST  10152-76-8			nity of 2,6,7-	trioxa-1-phosph	abicyclo[2.2.2	2]octane (RN 280	0-45-5).	
$H_3C-C$ $O-H-O$ $C-CH_3$ $C_4H_8S^+$ $CH_3SCH_2CH=CH_2$ $S.6$ $(\le 10.6)$ $(\le 22)$ $(\le 94)$ $-222$ $-929$ *EST 6993-75-5 $(\le 10.6)$ $(\le 22)$ $(\le 94)$ $-222$ $-929$ *EST 10152-76-8	CH <sub>3</sub>	<del>-</del>	nity of 4-me	thyl-2,6,7-trioxa-		cyclo[2.2.1]hepta	ne	
$H_3C-C$ $C-CH_3$ $C_4H_8S^+$ $CH_3SCH_2CH=CH_2$ $C_4H_8S$ $C_4H_$	C <sub>4</sub> H <sub>8</sub> O <sub>4</sub> <sup>+</sup>			·				
$CH_3SCH_2CH = CH_2$ 8.6 (210) (880) $12\pm 2$ 50\pm 9 *EST 10152-76-8	0 4 0	(≤10.6)	(≤22)	<b>(≤94)</b>	-222	-929	*EST	6993-75-5
		8.6	(210)	(880)	12±2	50±9	*EST	10152-76-8
	<del>-</del> -				11±1	48±6	*EST	627-50-9

Table 1. Positive Ion Table - Continued

	Table	1. I USILI	VC TOIL TUDI	e - Contini			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	$\Delta_{\mathbf{f}}H(\operatorname{Ne}$ kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>8</sub> S <sup>+</sup>							
s	8.47 Results from 83E	187.1 193.8	782.8 <i>810.8</i>	-8.2±0.2 -1.5	-34.1±0.9 -6.2	81KUD/KUD3	110-01-0
	100010 11011 001	.01,21122.					
		······································					
$C_4H_8S_2^+$ (Z)-CH <sub>3</sub> SCH = CHSCH <sub>3</sub>							
(2) 01130011 = 01130113	(≤7.80)	(≤203)	(≤849)	23	96	*EST	764-44-3
(E)-CH <sub>3</sub> SCH = CHSCH <sub>3</sub>							
· · · · · · · · · · · · · · · · · · ·	(≤7.85)	(≤204)	(≤853)	23	96	*EST	764-45-4
$CH_2 = C(SCH_3)_2$	(≤8.2)	(≤212)	(≤887)	23	96	*EST	51102-74-0
<b>८</b> °५	8.1	(178)	(746)	-9	-36	*EST	505-20-4
$\bigcup$	IP is onset of pho	toelectron t	oand.				
•		44.00	4 43	_	_	**************************************	505.00.7
S S	8.2 IP is onset of pho	(188) toelectron t	(786) pand.	-1	<del>-</del> 5	•EST	505-23-7
•							
( <sup>S</sup> )	(8.4)	(193)	(805)	-1	-5	•EST	505-29-3
( <sub>s</sub> )	IP is onset of pho	toelectron t	oand.				
C <sub>4</sub> H <sub>8</sub> S <sub>4</sub> +							
S	(7.8)	(197)	(825)	17	72	*EST	2373-00-4
s s	IP is onset of pho				72	201	2373-00-1
3							
C <sub>4</sub> H <sub>8</sub> Sc <sup>+</sup>							
$((E)-CH_3CH=CHCH_3)Sc$	:						
	$\Delta_{\rm f} H({ m Ion})$ from o	(191) nset of endo	(799) othermic reacti	on (84TOL/BE	A).		
ÇH <sub>3</sub>	1 . () 0.			•	•		
		(179)	(749)				
× \	$\Delta_{\mathbf{f}}H(\text{Ion})$ from or	nset of endo	thermic reacti	on (84TOL/BE	A).		

## **GAS-PHASE ION AND NEUTRAL THERMOCHEMISTRY**

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	∆ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry			
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number			
C <sub>4</sub> H <sub>9</sub> +										
n-C <sub>4</sub> H <sub>9</sub>	8.02	(203)	(849)	18	74	*EST	2492-36-6			
	IP from 84SCH/H	IP from 84SCH/HOU. Error limits $+0.04-0.1$ . $\Delta_f H$ (Neutral) based on								
	D[C-H] = 100.5 I	D[C-H] = 100.5  kcal/mol.								
							2948-55-2			
sec-C <sub>4</sub> H <sub>9</sub>	7.25±0.02	183	766	17.0±0.4	71.0±1.6	85TSA	<del>-4630-45-9</del>			
	IP from 84SCH/H potential measure									
	$\Delta_f H(Ion)$ - IP lead		_			Real mon				
	_[()	—[(-	,		,		1630-45-9			
iso-C <sub>4</sub> H <sub>9</sub>	7.93	(199)	(832)	16	70	81TSA	-65114-21-8			
	IP from 84SCH/H	OU. Error	limits +0.03-	0.1. $\Delta_f H$ (Neuti	ral) based on					
	D[C-H] = 100.5 k	ccal/mol.								
tert-C <sub>4</sub> H <sub>9</sub>	6.70±0.03	165.8	693.7	11.0±0.6	46.2±2.5	85TSA	1605-73-8			
1611-04119	Same value is obta					8313A	1003-73-8			
	potential measure				- •	= 95.5 kcal/mol.				
	$\Delta_f H(Ion)$ - IP lead									
			<del></del>				· · · · · · · · · · · · · · · · · · ·			
C <sub>4</sub> H <sub>9</sub> Br <sup>+</sup>	10.12	208	870	25 6 . 0 2	-107.1±1.3	ועמי משמפי	100 66 D			
n-C <sub>4</sub> H <sub>9</sub> Br	10.13 See: 81KIM/KAT		670	-23.0±0.3	-107.1±1.3	77PED/RYL	109-65-9			
	See. SIMINUMAI.	•								
sec-C <sub>4</sub> H <sub>9</sub> Br	9.98±0.01	201	842	-28.9±0.1	-120.9±0.4	77PED/RYL	78-76-2			
4. 9	See also: 81TRA,	81KIM/KA	T.							
iso-C <sub>4</sub> H <sub>9</sub> Br	10.09±0.02	(205)	(858)	-27	-115	*EST	78-77-3			
	See: 81KIM/KAT.	•								
tout C U De	9.92±0.03	197	824	-32	-133	79WIB/SQU	507-19-7			
tert-C <sub>4</sub> H <sub>9</sub> Br	9.92±0.03 See: 81KIM/KAT		024	-32	-133	79W1B/3QU	307-13-7			
	Occ. ondination									
C <sub>4</sub> H <sub>9</sub> Cl <sup>+</sup>										
n-C <sub>4</sub> H <sub>9</sub> Cl	10.67±0.03	209	874	-36.9±0.2	-154.5±1	78SEL/STR	109-69-3			
	See also: 81KIM/F	ζΑΤ.								
on C II C	10.53	204	855	-38±2	-161±8	77PED/RYL	78-86-4			
sec-C <sub>4</sub> H <sub>9</sub> Cl	See also: 81KIM/k		633	-JOIZ	-10120	//IED/RIL	70-00-4			
	000 0100. 011011471									
iso-C <sub>4</sub> H <sub>9</sub> Cl	10.66±0.03	208	869	-38±2	-159±8	77PED/RYL	513-36-0			
7 /	See also: 81KIM/F	KAT.								
tert-C <sub>4</sub> H <sub>9</sub> Cl	10.61±0.03	201	842	-43.5±0.3	-182.1±1.2	77PED/RYL	507-20-0			
	See also: 81KIM/K	AT.								
C <sub>4</sub> H <sub>9</sub> ClHg <sup>+</sup>										
n-C <sub>4</sub> H <sub>9</sub> HgCl	≤10.08	(≤206)	(≤864)	<b>-2</b> 6	-109	*EST	543-63-5			
4 7 0	IP from 81BAI/CF									
sec-C <sub>4</sub> H <sub>9</sub> HgCl	9.5	(194)	(814)	-25	-103	*EST	-38455-12-8			
	IP is onset of phot	oelectron ba	and (81BAI/C	:HI2).						

•

Table 1. Positive Ion Table - Continued

ION	Ionization naturalist	$\Delta_{\rm f}H({ m I}$	n)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	Ionization potential eV	kcal/mol		kcal/mol		reference	number
C <sub>4</sub> H <sub>9</sub> ClHg <sup>+</sup> 150-C <sub>4</sub> H <sub>9</sub> HgCl	≤10.04 IP from 81BAI/C	(≤204) CHI2.	(≤852)	-28	-117	*EST	27151-74-2
tert-C4HoHgCl	≤9.52 IP from 81BAI/C	(≤198) CHI2.	(≤830)	-21	-89	*EST	38442-51-2
C <sub>4</sub> H <sub>9</sub> ClO <sup>+</sup> tert-C <sub>4</sub> H <sub>9</sub> OCl	≤9.91 IP from 81COL/I	≤188 FRO.	≤788	<del>-</del> 40	-168	68WAL/PAP	507-40-4
C <sub>4</sub> H <sub>9</sub> Cl <sub>2</sub> P + tert-C <sub>4</sub> H <sub>9</sub> PCl <sub>2</sub>	(9.0) IP is onset of pho	(136) otoelectron l	(570) pand.	-71	-298	*EST	25979-07-1
C <sub>4</sub> H <sub>9</sub> F <sub>2</sub> P + tert-C <sub>4</sub> H <sub>9</sub> PF <sub>2</sub>	(9.2) IP is onset of pho	(34) otoelectron t	(143) pand.	-178	<b>-</b> 745	*EST	29149-32-4
C <sub>4</sub> H <sub>9</sub> F <sub>3</sub> N <sup>+</sup> CF <sub>3</sub> CH <sub>2</sub> NH(CH <sub>3</sub> ) <sub>2</sub>	From proton affi 900. kJ/mol.	–17 inity of CF <sub>3</sub> 0	-69 CH <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(RN 819-06-7).	PA = 215.0 k	cal/mol,	
CF <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> NH <sub>3</sub>	From proton affi 897 kJ/mol.	−29 inity of CF <sub>3</sub> 0	-122 CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> N	NH <sub>2</sub> (RN 819-4	6-5). PA = 21	4.3 kcal/mol,	
C <sub>4</sub> H <sub>9</sub> I <sup>+</sup> n-C <sub>4</sub> H <sub>9</sub> I	9.229	(200)	(838)	-12	-52	*EST	542-69-8
sec-C <sub>4</sub> H <sub>9</sub> I	See: 81KIM/KA7 9.09±0.02 See also: 81TRA	(195)		-15	-62	*EST	513-48-4
iso-C <sub>4</sub> H <sub>9</sub> I	9.202 See also: 81KIM	(197) /KAT.	(826)	-15	-62	*EST	513-38-2
tert-C <sub>4</sub> H <sub>9</sub> I	9.02±0.03 See also: 81KIM	191 /KAT.	798	-17.2±0.5	-72.0±2.2	77PED/RYL	558-17-8
$C_4H_9N^+$ $CH_2 = C(CH_3)CH_2NH_2$	(8.8) IP from 79AUE/	(207) ⁄BOW.	(866)	5	21	*EST	2878-14-0
$(E)-CH_3CH = NC_2H_5$	(9.29) See also: 79AUE	(218) Z/BOW.	(914)	4±0.2	18±1	*EST	1190-79-0

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	l Δ <sub>f</sub> H(Io	ve ion ian			Navanal	CAS
Neutral	eV	•	kJ/mol	Δ <sub>f</sub> H(N kcal/mo	eutrai) l kJ/moi	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>9</sub> N <sup>+</sup>							
, ,	(8.0) IP from 79AUE, homologous seri				lrogen affinitie		123-75-1
CH <sub>3</sub>	(8.94)	(222)	(929)	16±0.5	66±2	*EST	2658-24-4
C <sub>4</sub> H <sub>9</sub> NO <sup>+</sup>							
tert-C <sub>4</sub> H <sub>9</sub> NO	(7.5) IP is onset of pho	(163) otoelectron b	(681) and.	-10±1	-43±6	74CHO/MEN	917-95-3
CH <sub>3</sub> CON(CH <sub>3</sub> ) <sub>2</sub>	8.81	147	617	-56	-233	78BEA/LEE	127-19-5
(E)-CH <sub>3</sub> (CH <sub>2</sub> ) <sub>2</sub> CH = NOH	(9.5) IP is onset of pho	(203) otoelectron ba	(849) and.	-16	-68	*EST	110-69-0
(°)	(8.2)	(201)	(842)	12	51	•EST	110-91-8
C <sub>4</sub> H <sub>9</sub> NOS <sup>+</sup>		····		·			······································
(CH <sub>3</sub> ) <sub>3</sub> CNSO	(10.0) IP is onset of pho	(166) stoelectron ba	(695) and.	-65	-270	*EST	38662-39-4
С <sub>4</sub> H <sub>9</sub> NO <sub>2</sub> <sup>+</sup> H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> COOH	(8.7)	(95)	(398)	~105±0.5	-441±2	83SKO/SAB	56-12-2
	IP is onset of pho						
C <sub>2</sub> H <sub>5</sub> CH(NH <sub>2</sub> )COOH	(8.70)	(97)	(402)	-104±2	-437±10	*EST	80-60-4
H <sub>2</sub> NCH <sub>2</sub> COOC <sub>2</sub> H <sub>5</sub>	(8.8)	(107)	(447)	<b>-</b> 96	-402	*EST	459-73-4
n-C <sub>4</sub> H <sub>9</sub> NO <sub>2</sub>	(10.71±0.01)	(213)	(889)	-34.4±0.3	-143.9±1.4	77PED/RYL	627-05-4
sec-C <sub>4</sub> H <sub>9</sub> NO <sub>2</sub>	(10.71±0.01)	(208)	(870)	−39.1±0.4	-163.6±1.6	77PED/RYL	600-24-8
C <sub>4</sub> H <sub>9</sub> NO <sub>2</sub> S <sup>+</sup> L-CH <sub>3</sub> SCH <sub>2</sub> CH(NH <sub>2</sub> )COO	Н						
	(8.4) IP is onset of photo		(412) nd (83CAN/F	-95 IAM).	-398	*EST	1187-84-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol	-	Veutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>9</sub> NO <sub>3</sub> +							
L-CH <sub>3</sub> CH(OH)CH(NH	_						
	(≤10.2) IP from 83CAN/F	(≤94) łAM.	(≤392)	-141	-592	*EST	72-19-5
C <sub>4</sub> H <sub>9</sub> N <sub>2</sub> + .							
NCCH <sub>2</sub> NH(CH <sub>3</sub> ) <sub>2</sub>	From proton affir 883. kJ/mol.	(188) nity of NC	(788) CH <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub> (	RN 926-64-7)	). PA = 211.1 kg	cal/mol,	
C <sub>4</sub> H <sub>9</sub> N <sub>2</sub> O <sub>3</sub> +					`		
L-H2NCOCH2CH(NH	3)СООН	_	40				
	From proton affir 920. kJ/mol.	5 nity of L-a	19 sparagine (RN 3	3130-87-8). P	A = 219.8 kcal/	mol,	
 С <sub>4</sub> Н <sub>9</sub> О <sup>†</sup>							
n-C <sub>4</sub> H <sub>9</sub> O	(9.22)	(196)	(820)	-17	-69	82MCM/GOI	21576-64-7
п-С <sub>3</sub> Н <sub>7</sub> СНОН	From proton affii 801. kJ/mol.	124 nity of n-C	521 C <sub>3</sub> H <sub>7</sub> CHO (RN	123-72-8). P <i>a</i>	A = 191.5 kcal/n	nol,	
i-С <sub>3</sub> Н <sub>7</sub> СНОН	From proton affii 806. kJ/mol.	121 nity of i-C	508 <sub>3</sub> H <sub>7</sub> CHO (RN 7	8-84-2). PA	= 192.6 kcal/mc	ol,	
(CH <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> )COH		109	455				
	From proton affin 836. kJ/mol. See	-				nol,	
С <sub>2</sub> Н <sub>5</sub> ОСНСН <sub>3</sub>		125	521				
	From proton affin 868. kJ/mol (86B)				). PA = 207.4 k	cal/mol,	
(CH <sub>3</sub> ) <sub>2</sub> COCH <sub>3</sub>		(114)	(477)				
	From appearance	potential	determination (	(82MAC).			
/_ <sup>0</sup> _\		123	514				
( <u></u> ) н	From proton affine 831. kJ/mol.	nity of teti	rahydrofuran (R	N 109-99-9).	PA = 198.8 kca	ı/moi,	
C <sub>4</sub> H <sub>9</sub> O <sub>2</sub> +							
1HOH(O-n-C <sub>3</sub> H <sub>7</sub> )		61	256	221110 74 7	DA 104 2 les		

From proton affinity of  $HCOO(n-C_3H_7)$  (RN 110-74-7). PA = 194.2 kcal/mol,

812.5 kJ/mol.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>4</sub> H <sub>9</sub> O <sub>2</sub> + нсон(О-i-С <sub>3</sub> H <sub>7</sub> )	From proton affii 820. kJ/mol.	73 nity of HCO	305 OCH(CH <sub>3</sub> ) <sub>2</sub>	(RN 625-55-8).	PA = 196.0	) kcal/mol,	
СН <sub>3</sub> СОН(О-С <sub>2</sub> Н <sub>5</sub> )	From proton affii 840. kJ/mol.	59 nity of CH <sub>3</sub> (	247 COOC <sub>2</sub> H <sub>5</sub> (R	N 141-78-6). P	A = 200.7  k	cal/mol,	
С <sub>2</sub> H <sub>5</sub> COH(O-CH <sub>3</sub> )	From proton affin 838. kJ/mol.	62 nity of C <sub>2</sub> H <sub>5</sub>	260 СООСН <sub>З</sub> (R	N 554-12-1). P	A = 200.2 kg	cal/mol,	
(CO) Ht	From proton affii 832. kJ/mol.	86 nity of 1,3-di	360 oxane (RN 50	5-22-6). PA =	198.8 kcal/m	ool,	
(0) H <sup>+</sup>	From proton affir 811. kJ/mol.	96 nity of 1,4-die	403 oxane (RN 12	3-91-1). PA =	193.8 kcal/m	ol,	
С <sub>4</sub> H <sub>9</sub> O <sub>2</sub> S <sup>+</sup> С <sub>2</sub> H <sub>5</sub> s(осн <sub>3</sub> )сон	From proton affir 841. kJ/mol.	64 nity of C <sub>2</sub> H <sub>5</sub>	269 S(OCH <sub>3</sub> )CO	(RN 38103-96-	7). PA = 20	01.0 kcal/mol,	
C <sub>4</sub> H <sub>9</sub> O <sub>3</sub> + C(OCH <sub>3</sub> ) <sub>3</sub>	From appearance appearance poten	_					
С <sub>2</sub> Н <sub>5</sub> ОС(ОН)ОСН <sub>3</sub>	From proton affir 848 kJ/mol.	22 nity of C <sub>2</sub> H <sub>5</sub>	90 OCOOCH <sub>3</sub> (	RN 623-53-0).	PA = 202.7	kcal/mol,	
C <sub>4</sub> H <sub>9</sub> O <sub>3</sub> P +			······································				
0 p - 0CH <sub>3</sub>	(8.74±0.1)	(26)	(110)	-175	-733	*EST	31121-06-9
					· · · · · · · · · · · · · · · · · · ·		

Table 1. Positive Ion Table - Continued

			e ion labi				
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		∆ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>9</sub> S <sup>+</sup> (	From proton affin PA = 204.6 kcal/r			ne (RN 110-01-0	) (83CAS/KIN	М).	
C <sub>4</sub> H <sub>10</sub> + n-C <sub>4</sub> H <sub>10</sub>	10.53±0.10 IP based on charg IP (c-C <sub>5</sub> H <sub>10</sub> ) = 10		_	nstant in cyclope		77PED/RYL ane system. ee also: 81KIM/KAT	106-97-8 Г.
iso-C <sub>4</sub> H <sub>10</sub>	10.57 See also: 81KIM/F	(212) KAT.	(885)	-32.1±0.1	-134.5±0.5	77PED/RYL	75-28-5
C <sub>4</sub> H <sub>10</sub> Cd <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> Cd	(8.0) IP is onset of phot	(210) coelectron b	(877) pand.	25±0.7	105±3	77PED/RYL	592-02-9
С <sub>4</sub> H <sub>10</sub> Cl <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> CHClCH <sub>3</sub>	From equilibrium	(150) constant de	(628) etermination	(85SHA/HOJ).			
C <sub>4</sub> H <sub>10</sub> Cl <sub>2</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiCHCl <sub>2</sub>	(9.7) IP is onset of phot	(163) oelectron b	(683) pand (81ZYK)	-60 KHV).	-253	*EST	5926-38-5
(CH <sub>3</sub> ) <sub>2</sub> Si(CH <sub>2</sub> Cl) <sub>2</sub>	(9.7) IP is onset of phot	(165) oelectron b	(689) eand (81ZYK)	-59 KHV).	-247	•est	2917-46-6
C <sub>4</sub> H <sub>10</sub> Hg <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> Hg	≤8.45	≤212	≤887	17.3±0.2	72.3±0.8	77PED/RYL	627-44-1
C <sub>4</sub> H <sub>10</sub> N <sup>+</sup> CH <sub>2</sub> C(CH <sub>3</sub> )CH <sub>2</sub> NH <sub>3</sub>	From proton affin (913.) kJ/mol.	(152) ity of CH <sub>2</sub> :	(638) = C(CH <sub>3</sub> )CH	<sub>2</sub> nh <sub>2</sub> (Rn 2878	-14-0). PA =	(218.2) kcal/mol,	
CH <sub>3</sub> CHN(CH <sub>3</sub> ) <sub>2</sub>	From proton affin 953. kJ/mol.	153 ity of (CH <sub>3</sub>	639 ) <sub>2</sub> NCH = CH	<sub>2</sub> (RN 5763-87-1	l). PA = 227.	8 kcal/mol,	
CH₃CHNHC₂H5	From proton affin 932. kJ/mol.	147 ity of CH <sub>3</sub> (	616 CH=NC <sub>2</sub> H <sub>5</sub>	(RN 1190-79-0).	PA = 222.7	kcal/mol,	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H kcal/m	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>4</sub> H <sub>10</sub> N <sup>+</sup>										
H <sup>N</sup>	From proton affir 942. kJ/mol.	140 lity of pyr	585 rolidine (RN 12	3-75-1). PA =	225.2 kcal/mc	ol,				
C <sub>4</sub> H <sub>10</sub> NO <sup>+</sup> CH <sub>3</sub> C(OH)N(CH <sub>3</sub> ) <sub>2</sub>										
	From proton affin PA = 216.2 kcal/r			RN 127-19-5) (	(86TAF/GAL)	).				
n-C <sub>3</sub> H <sub>7</sub> NHCHOH	From proton affin (879.) kJ/mol.	95 ity of n-C	395 3H <sub>7</sub> NHCHO (1	RN 6281-94 <b>-</b> 3).	PA = (210.0	) kcal/mol,				
( H	From proton affin 918. kJ/mol.	158 ity of mo	663 rpholine (RN 11	0-91-8). PA =	219.4 kcal/m	ol,				
C <sub>4</sub> H <sub>10</sub> NO <sub>2</sub> + t-C <sub>4</sub> H <sub>9</sub> ONHO	From proton affin 861. kJ/mol.	119 ity of t-C	497 <sub>4</sub> H <sub>9</sub> ONO (RN 5	540-80-7). PA	= 205.7 kcal/n	nol,				
C <sub>4</sub> H <sub>10</sub> NO <sub>3</sub> +					<del> </del>					
CH <sub>3</sub> CH(OH)CH(NH <sub>3</sub> )C	COOH  From proton affin  915. kJ/mol.	(6) ity of L-tl	(23) areonine (RN 72	2-19-5). PA =	218.6 kcal/mo	ı,				
$C_4H_{10}N_2^+$ (CH <sub>3</sub> ) <sub>2</sub> NN=CHCH <sub>3</sub>	(7.54)	(176)	(736)	2	9	80LEB/MAS	7422-90-4			
1-Z Z-I	(≤8.72)	(≤207)	(≤866)	6±0.2	25±1	*EST	110-85-0			
С <sub>4</sub> H <sub>10</sub> N <sub>2</sub> O <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NCONHCH <sub>3</sub>	(≤8.80)	(≤146)	(≤609)	-57	-240	*EST	632-14-4			
С <sub>4</sub> H <sub>10</sub> O <sup>+</sup> n-С <sub>4</sub> H <sub>9</sub> OH	10.06±0.03 See also: 81KIM/K	166 AT, 80B	696 AC/MOU, 84B0		-275.0±0.4	77PED/RYL	71-36-3			
sec-C <sub>4</sub> H <sub>9</sub> OH	9.88 IP from 81HOL/F	158 IN, 84BO	660 W/MAC. See a		−295.0±0.4 OU.	77PED/RYL	78-92-2			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Net		Neutral reference	CAS registry number
С <sub>4</sub> Н <sub>10</sub> О <sup>+</sup> iso-С <sub>4</sub> Н <sub>9</sub> ОН	10.12±0.04 IP from 81HOL/F	166 IN, 84BOW	692 //MAC, <i>7</i> 7ROS		-283.6±0.4	77PED/RYL	78-83-1
tert-C <sub>4</sub> H <sub>9</sub> OH	9.97±0.02 See also: 84BOW	155 /MAC.	650	-74.7±0.7	−312.5±2.9	77PED/RYL	75-65-0
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O	9.51±0.03 See also: 81KIM/I	159 KAT, 80BA	666 C/MOU, 84BO		-251.7±0.3	77PED/RYL	60-29-7
n-C <sub>3</sub> H <sub>7</sub> OCH <sub>3</sub>	(9.42) IP from 84BOW/	(160) MAC. Sec a	(671) Iso: 80BAC/MC		-237.9±0.5	77PED/RYL	557-17-5
i-C <sub>3</sub> H <sub>7</sub> OCH <sub>3</sub>	9.42 IP from 81HOL/I	157 FIN, 84BOW	657 //MAC.	-60.2±0.2	-252.0±0.9	77PED/RYL	598-53-8
C <sub>4</sub> H <sub>10</sub> OS <sup>+</sup> (CH <sub>3</sub> CH <sub>2</sub> ) <sub>2</sub> SO	≤8.76	≤153	≤640	-49.1±0.4	-205.6±1.5	77PED/RYL	70-29-1
С <sub>4</sub> H <sub>10</sub> O <sub>2</sub> <sup>+</sup> n-С <sub>4</sub> H <sub>9</sub> ООН	(9.36±0.03) IP from 77ASH/E	(166) BUR.	(696)	-49	-207	*EST	4813-50-7
tert-C <sub>4</sub> H <sub>9</sub> OOH	(≤10.24)	(≤178)	(≤744)	-58±1	-244±6	77PED/RYL	75-91-2
HOCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> OCH <sub>3</sub>	(9.3) IP is onset of pho	(122) toelectron t	(509) and (83BIE/M	-93 OR).	-388	*EST	1320-67-8
HOCH <sub>2</sub> CH <sub>2</sub> OC <sub>2</sub> H <sub>5</sub>	(9.6) IP is onset of pho	(126) toelectron t	(528) pand (81KIM/K	-95 AT).	-398	*EST	110-80-5
CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> OCH <sub>3</sub>	(9.3) IP is onset of pho	(133) toelectron t	(557) oand (83BAK/A	-81 RM, 81KIM/	340 KAT).	67LOU/LAI	110-71-4
СН <sub>3</sub> СН(ОСН <sub>3</sub> ) <sub>2</sub>	(9.65±0.03)	(129)	(541)	-93.1±0.2	-389.7±0.8	77PED/RYL	534-15-6
C <sub>4</sub> H <sub>10</sub> O <sub>2</sub> S + (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> SO <sub>2</sub>	(9.96±0.03)	(127)	(532)	-103±0.7	-429±3	77PED/RYL	597-35-3
C <sub>4</sub> H <sub>10</sub> O <sub>3</sub> + CH(OCH <sub>3</sub> ) <sub>3</sub>	(9.5) IP from 82HOL/	(89) LOS2.	(372)	-130±0.2	-545±1	77PED/RYL	149-73-5
C <sub>4</sub> H <sub>10</sub> O <sub>3</sub> P <sup>+</sup>					====		
C <sub>4</sub> H <sub>10</sub> O <sub>3</sub> P +	From proton affi PA = 219.4 kcal/	•	-	aphosphorina	ine (RN 31121-	06-9).	

Table 1. Positive Ion Table - Continued

			e lon labi	e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>10</sub> O <sub>3</sub> S + (C <sub>2</sub> H <sub>5</sub> O) <sub>2</sub> SO	(9.68)	(91)	(382)	-132±0.5	-552±2	77PED/RYL	623-81-4
C <sub>4</sub> H <sub>10</sub> S +							
n-C <sub>4</sub> H <sub>9</sub> SH	9.14±0.02	190	794	-21.1±0.3	-88.1±1.2	77PED/RYL	109-79-5
sec-C <sub>4</sub> H <sub>9</sub> SH	(9.10)	(187)	(781)	-23.2±0.2	-96.9±0.8	77PED/RYL	513-53-1
iso-C <sub>4</sub> H <sub>9</sub> SH	(9.12)	(187)	(783)	-23.3±0.2	-97.3±0.8	77PED/RYL	513-44-0
tert-C <sub>4</sub> H <sub>9</sub> SH	(9.03)	(182)	(762)	-26.2±0.2	-109.6±0.8	77PED/RYL	75-66-1
n-C <sub>3</sub> H <sub>7</sub> SCH <sub>3</sub>	(8.8±0.2)	(183)	(767)	-19.6±0.2	-82.2±0.9	77PED/RYL	3877-15-4
iso-C <sub>3</sub> H <sub>7</sub> SCH <sub>3</sub>	(8.7±0.2)	(179)	(748)	-21.6±0.2	-90.5±0.7	77PED/RYL	
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> S	8.43±0.01	174 <i>181</i>	729 757	-20±0.2 -13	-84±1 -56	77PED/RYL	352-93-2
$C_4H_{10}SSi^+$ $(C_2H_5)_2Si=S$ $(H_3C)_2Si^-$	$\Delta_f H$ (Ion) from ap (8.25 $\pm$ 0.03) IP from 81GUS/V	(193)	(787) otential deter	mination (81GV	JS/VOL). (10)	81GUS/VOL	77205-52-8
C <sub>4</sub> H <sub>10</sub> S <sub>2</sub> + (C <sub>2</sub> H <sub>5</sub> S) <sub>2</sub>	≤8.27±0.03  Dialkyl disulfides upon ionization; a	-	-		ingle from 90°		110-81-6
	the experimentally	_		-			
CH <sub>3</sub> SCH <sub>2</sub> CH <sub>2</sub> SCH <sub>3</sub>	(≤8.64)	(≤190)	(≤797)	<b>-9</b>	-37	*EST	6628-18-8
C <sub>4</sub> H <sub>10</sub> Sc <sup>+</sup> HScCH(CH <sub>3</sub> )C <sub>2</sub> H <sub>5</sub>	$\Delta_{ m f} H$ (Ion) from on	(195) uset of endo	(816) thermic react	on (84TOL/BE	A).		
CH <sub>3</sub> ScC <sub>3</sub> H <sub>7</sub>	$\Delta_f H$ (Ion) from on	(174) set of endot	(728) thermic reacti	on (84TOL/BE	A).		
C <sub>2</sub> H <sub>4</sub> Sc(CH <sub>3</sub> ) <sub>2</sub>	$\Delta_f H$ (Ion) from on	(175) set of endot	(732) hermic reacti	on (84TOL/BE	A).		
(CH <sub>3</sub> CH = CH <sub>2</sub> )ScH(CH <sub>3</sub> )	$\Delta_{ m f} H$ (Ion) from on	(184) set of endot	(770) hermic reacti	on (84TOL/BE	A).		

Table 1. Positive Ion Table - Continued

YOM			YE TON TADI				
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>10</sub> Sc + (CH <sub>3</sub> CH = CHCH <sub>3</sub> )ScH <sub>2</sub>			<u> </u>				
	$\Delta_{\mathbf{f}}H$ (Ion) from $\mathbf{c}$	(195) enset of endo	(816) othermic react	ion (84TOL/BE	3A).		
C <sub>4</sub> H <sub>10</sub> Se <sup>+</sup>						· · · · · · · · · · · · · · · · · · ·	
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> Se	(8.3±0.3)	(178)	(743)	-14±1	-58±5	77PED/RYL	627-53-2
C <sub>4</sub> H <sub>10</sub> Zn <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> Zn	(≤8.6)	(≤212)	(≤888)	14±0.7	58±3	77PED/RYL	557-20-0
C <sub>4</sub> H <sub>11</sub> +					· · · · · · · · · · · · · · · · · · ·		
((CH <sub>3</sub> ) <sub>3</sub> CH)H	From proton affi 683. kJ/mol.	170 nity of iso-C	712 4H <sub>10</sub> . (RN 75	-28-5). PA = 1	.63.3 kcal/mol,		
C <sub>4</sub> H <sub>11</sub> ClO <sub>3</sub> Si <sup>+</sup> (CH <sub>3</sub> O) <sub>3</sub> SiCH <sub>2</sub> Cl	(10.0) IP is onset of pho	(4) otoelectron b	(17) pand (81ZYK)	226 KHV).	-948	•EST	5926-26-1
C <sub>4</sub> H <sub>11</sub> ClSi <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiCH <sub>2</sub> Cl	(9.4) IP is onset of pho	(159) otoelectron b	(667) pand (81ZYK/	-57 KHV, 82LEV/I	-240 LIA).	*EST	2344-80-1
C <sub>4</sub> H <sub>11</sub> N <sup>+</sup>							
n-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	8.71±0.03 See also: 81KIM/	179 KAT, 79AU	748 E/BOW.	-22±0.2	-92±1	77PED/RYL	109-73-9
sec-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	(8.70)	(176)	(734)	-25.0±0.2	-104.8±0.9	77PED/RYL	13952-84-6
iso-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	(8.70)	(177)	(741)	-23.6±0.1	-98.8±0.4	77PED/RYL	78-81-9
tert-C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	(8.64)	(170)	(713)	-28.9±0.1	-120.9±0.4	77PED/RYL	75-64-9
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NH	8.01±0.01	167	700	-17.4±0.5	-72.6±2	77PED/RYL	109-89-7
C <sub>2</sub> H <sub>5</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(7.74±0.05) IP is onset of pho	(167) otoelectron b	(701) pand. See also	-11 : 81LOG/TAK,	-48 79AUE/BOW	•EST	598-56-1
C <sub>4</sub> H <sub>11</sub> NO <sup>+</sup>		·-		<del></del>	<u></u>		······································
(CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> OH	(8.2) IP is onset of pho	(140) stoelectron b	(587) and (82LEV/	-49 LIA, 86VOR/B	-204 RO).	81LOS/LAM	108-01-0
C <sub>4</sub> H <sub>11</sub> N <sub>2</sub> +							
(N) H+	From proton affin	147 nity of pipera	617 azine (RN 110	1-85-0). PA = 2	24.2 kcal/mol,		

Table 1. Positive Ion Table - Continued

	Table	I. I USILIV	ve fon Table	e - Contin	iucu		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>11</sub> N <sub>2</sub> +							
(HN CH3 ) Ht	From proton affir PA = (214.9) kca			ziridine (RN	1901-75 <b>-</b> 1).		
C <sub>4</sub> H <sub>11</sub> O +							
n-C <sub>4</sub> H <sub>9</sub> OH <sub>2</sub>	From proton affin	109 lity of n-C <sub>4</sub> I	456 H <sub>9</sub> OH (RN 71	1-36-3). PA =	191.1 kcal/m	ol, 799.5 kJ/mol.	
sec-C <sub>4</sub> H <sub>9</sub> OH <sub>2</sub>	From proton affin PA = (195) kcal/i	-		78-92-2) (78P <i>1</i>	AU/KIM).		
iso-C <sub>4</sub> H <sub>9</sub> OH <sub>2</sub>	From proton affin PA = 192.4 kcal/r	-		78-83-1) (78T <i>a</i>	AF/TAA).		
tert-C <sub>4</sub> H <sub>9</sub> OH <sub>2</sub>	From proton affin 810. kJ/mol.	97 ity of tert-C	408 C <sub>4</sub> H <sub>9</sub> OH (RN	75-65-0). PA	= 193.7 kcal/	/mol,	
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> OH	From proton affin PA = 200.2 kcal/r	_		29-7) (86KNI/	FRE, 86MAU	J/LIE).	
С <sub>4</sub> Н <sub>11</sub> О <sub>2</sub> + НО(СН <sub>2</sub> ) <sub>4</sub> ОН <sub>2</sub>	From proton affin (887) kJ/mol.	52 ity of HO(C	216 CH <sub>2</sub> ) <sub>4</sub> OH (RI	N 110-63-4). P	'A = (212) kc	eal/mol,	
сн <sub>3</sub> осн <sub>2</sub> сн <sub>2</sub> онсн <sub>3</sub>							
	From proton affin 857. kJ/mol.	80 ity of CH <sub>3</sub> C	333 OCH <sub>2</sub> CH <sub>2</sub> OC	EH <sub>3</sub> (RN 110-7	'1-4). PA = 2	204.9 kcal/mol,	
С <sub>4</sub> H <sub>11</sub> O <sub>3</sub> P <sup>+</sup> ОРН(ОС <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(10.31) See also: 80ZVE/V	(19) /IL.	(79)	-219	-916	*EST	762-04-9
C <sub>4</sub> H <sub>11</sub> P <sup>+</sup>				- <u>                                    </u>		***************************************	
tert-C <sub>4</sub> H <sub>9</sub> PH <sub>2</sub>	(8.9) IP is onset of phot	(181) oelectron b	(757) and.	-24	-102	*EST	2501-94-2
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> PH	(8.69)	(176)	(736)	-24	-102	*EST	627-49-6
C <sub>4</sub> H <sub>11</sub> S <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> SH	From proton affin	141 ity of (C <sub>2</sub> H	588 <sub>5</sub> ) <sub>2</sub> S (RN 352-	93-2). PA =	205.0 kcal/mo	ol, 858. kJ/mol.	

Table 1. Positive Ion Table - Continued

			e ion table	= Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>4</sub> H <sub>11</sub> S + tert-C <sub>4</sub> H <sub>9</sub> SH <sub>2</sub>	From proton affi	143 nity of t-C <sub>4</sub> F	596 I <sub>9</sub> SH (RN 75-	66-1). PA = 1	96.9 kcal/mol	, 824. kJ/moi.	
sec-C <sub>4</sub> H <sub>9</sub> SH <sub>2</sub>	From proton affi PA = (194.0) kca			13-53-1) (78P <i>A</i>	.U/KIM).		
C <sub>4</sub> H <sub>11</sub> SSi <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> SiSH	Δ <sub>f</sub> H(Ion) from a	(157) ppearance p	(657) otential detern	nination (81G)	JS/VOL).		
C <sub>4</sub> H <sub>12</sub> BClN <sub>2</sub> + B(N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>2</sub> Cl	8.08	106	445	-80±1	-335±5	77PED/RYL	6562-41-0
C <sub>4</sub> H <sub>12</sub> CIN <sub>2</sub> OP + ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> POCI	(8.61)	(75)	(316)	-123	-515	*EST	1605-65-8
C <sub>4</sub> H <sub>12</sub> CIN <sub>2</sub> P + ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> PCI	(7.6) IP is onset of pho	(127) otoelectron b	(531) and.	-48	-202	*EST	3348-44-5
C <sub>4</sub> H <sub>12</sub> F <sub>4</sub> N <sub>5</sub> P <sub>3</sub> +  (CH <sub>3</sub> ) <sub>2</sub> N P N P F    P   P   F     F <sub>2</sub>	(8.96) IP from 81CLA/S	(-169) SOW.	(-706)	-375.5	-1571	*EST	30004-14-9
C <sub>4</sub> H <sub>12</sub> Ge <sup>+</sup> (CH <sub>3</sub> ) <sub>4</sub> Ge	9.33±0.05	198	828	-17±2	<b>−72±</b> 9	77PED/RYL	865-52-1
C <sub>4</sub> H <sub>12</sub> N + n-C <sub>4</sub> H <sub>9</sub> NH <sub>3</sub>	From proton affi	122 nity of n-C <sub>4</sub> F	524 I <sub>9</sub> NH <sub>2</sub> (RN 1	09-73-9). PA =	= 218.4 kcal/n	nol,	
sec-C <sub>4</sub> H <sub>9</sub> NH <sub>3</sub>	From proton affin	120 nity of sec-C	502 <sub>4</sub> H <sub>9</sub> NH <sub>2</sub> (RN	13952-84-6). F	A = 220.5 kg	cal/mol,	
iso-C <sub>4</sub> H <sub>9</sub> NH <sub>3</sub>	From proton affin	123 nity of iso-C <sub>d</sub>	515 <sub>4</sub> H <sub>9</sub> NH <sub>2</sub> (RN	78-81-9). PA :	= 218.8 kcal/r	nol,	
tert-C <sub>4</sub> H <sub>9</sub> NH <sub>3</sub>	From proton affii 924. kJ/mol.	116 nity of tert-C	485 4H9NH <sub>2</sub> (RN	175-64-9). PA	= 220.8 kcal/	mol,	
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affii 945. kJ/mol.	125 nity of (C <sub>2</sub> H <sub>2</sub>	512 <sub>5</sub> ) <sub>2</sub> NH (RN 10	)9-89-7). PA =	225.9 kcal/m	ool,	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$	n)	$\Delta_{\mathbf{f}}H(\mathbf{N})$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	-	kJ/mol	reference	number
C <sub>4</sub> H <sub>12</sub> N <sup>+</sup>							
(CH <sub>3</sub> ) <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> )NH		127	531				
	From proton affi	inity of (CH <sub>3</sub>	) <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> )N (	RN 598-56-1).	PA = 227.5  kc	al/mol,	
	952. kJ/mol.						
C <sub>4</sub> H <sub>12</sub> NO <sup>+</sup>							
NH <sub>3</sub> (CH <sub>2)4</sub> OH		75	312				
	From proton affi 978. kJ/mol.	inity of NH <sub>2</sub> (	СН <sub>2</sub> ) <sub>4</sub> ОН (F	IN 13325-10-5)	PA = 233.8 k	cal/mol,	
C <sub>4</sub> H <sub>12</sub> NO <sub>2</sub> P <sup>+</sup>							
(CH <sub>3</sub> O) <sub>2</sub> PN(CH <sub>3</sub> ) <sub>2</sub>	(8.1)	(71)	(296)	-116	-486	*EST	597-07-9
	(8.1) IP is onset of pho				700	1231	J71*U1*7
			,				
C <sub>4</sub> H <sub>12</sub> N <sub>2</sub> +							
(CH3)2NN(CH3)2	(6.87)	(175)	(732)	16	69	61GOW/JON	6415-12-9
	IP from charge to IP(C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> )				on (86RUM). R	eference standard:	
C <sub>4</sub> H <sub>12</sub> N <sub>2</sub> S <sub>2</sub> +		***************************************					
(CH <sub>3</sub> ) <sub>2</sub> NSSN(CH <sub>3</sub> ) <sub>2</sub>							
_	(7.2)	(163)	(683)	<b>-</b> 3	-12	*EST	928-05-2
	IP is onset of pho	otoelectron ba	and (81BOC/	SCH).			
C <sub>4</sub> H <sub>12</sub> N <sub>4</sub> <sup>+</sup>							
(E)-(CH <sub>3</sub> )NN=NN(CH <sub>3</sub> )	2						
(E)-(CH <sub>3</sub> )NN=NN(CH <sub>3</sub> ) <sub>2</sub>	(7.0)	(227)	(948)	65±0.7	273±3	77PED/RYL	6130-87-6
••	IP is onset of pho	toelectron ba	and.				
C <sub>4</sub> H <sub>12</sub> OSi <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> SiOCH <sub>3</sub>	9.61	(110)	(459)	-112±2	-468±8	*EST	1825-61-2
, 55 5	IP from 83MOL/	• •	• •		•		
C <sub>4</sub> H <sub>12</sub> Pb <sup>+</sup>							
(CH <sub>3</sub> ) <sub>4</sub> Pb	(8.50)	(229)	(956)	33±1	136±4	82PIL/SKI	75-74-1
			<del></del>			7	
C <sub>4</sub> H <sub>12</sub> Si <sup>+</sup>	0.00.004	170	711	66.710.7	222.0 .0.0	oaemea	76 76 2
(CH <sub>3</sub> ) <sub>4</sub> Si	9.80±0.04	170 <i>178</i>	711 <i>743</i>	-55.7±0.7 -48	-233.0±2.9 -202	83STE2	75-76-3
		170	775	70	202		
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> SiH <sub>2</sub>	(9.8)	(182)	(763)	-44±1	-183±6	77PED/RYL	542-91-6
C <sub>4</sub> H <sub>12</sub> SiS <sup>+</sup>					<del></del>	· ·	
(CH <sub>3</sub> ) <sub>3</sub> SiSCH <sub>3</sub>	(8.4)	-	(534)	-66	-276	*EST	3908-55-2
,	IP is onset of pho	toelectron ba	nd.				
C <sub>4</sub> H <sub>12</sub> Sn <sup>+</sup>				- <u>-</u>			
(CH <sub>3</sub> ) <sub>4</sub> Sn	8.89±0.05	200	838	-5±0.5	-20±2	77PED/RYL	594-27-4
· J/4	· · · · · · · · · · · · · · · · · · ·	<del> </del>					· ·

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>4</sub> H <sub>13</sub> N <sub>2</sub> + NH <sub>2</sub> (CH <sub>2</sub> ) <sub>4</sub> NH <sub>3</sub>	From proton affin 994 kJ/mol.	115 hity of NH <sub>2</sub> (	483 (CH <sub>2</sub> ) <sub>4</sub> NH <sub>2</sub> (	RN 110-60-1).	PA = 237.6 l	ccal/mol,	
(CH <sub>3</sub> ) <sub>2</sub> NNH(CH <sub>3</sub> ) <sub>2</sub>	From proton affin PA = 224.8 kcal/r			(RN 6415-12-9	9) (84MAU/N	EL).	
C <sub>4</sub> H <sub>13</sub> OSi <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> Si(OH)CH <sub>3</sub>	From proton affin -849 kJ/mol.	(51) hity of (CH <sub>3</sub>	(213) ) <sub>3</sub> SiOCH <sub>3</sub> (R	N 1825-61-2).	PA = ~203 k	cal/mol,	
C <sub>4</sub> H <sub>14</sub> N <sub>3</sub> OP <sup>+</sup> ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> (NH <sub>2</sub> )PO	(8.60±0.05)	(83)	(348)	-115	-482	*EST	3732-86-3
C <sub>4</sub> H <sub>15</sub> N <sub>3</sub> OP <sup>+</sup> ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> (NH <sub>2</sub> )POH	From proton affin PA = 224.4 kcal/r			PO (RN 3732-1	86-3) (85BOL	/HOU).	
C <sub>4</sub> H <sub>15</sub> OSi <sub>2</sub> + ((CH <sub>3</sub> ) <sub>2</sub> SiH) <sub>2</sub> OH	From proton affin -849 kJ/mol.	(6) lity of ((CH	(26) <sub>3</sub> ) <sub>2</sub> SiH) <sub>2</sub> O (R	IN 3277-26-7).	PA = -203 k	cal/mol,	Ŷ
C <sub>4</sub> I <sub>4</sub> S + I   S   I   I	(≤8.27)	(≤302)	(≤1262)	111	464	*EST	19259-11-1
C <sub>4</sub> La <sup>+</sup> LaC <sub>4</sub>	(4.7±0.5)	(288)	(1207)	180±2	754±8	81GIN/PEL	12603-31-5
C <sub>4</sub> N <sub>2</sub> <sup>+</sup> NCC≡CCN	11.81±0.01 See also: 82MAI/N	400 MIS.	1673	128	534	82CHU/NGU	1071-98-3
C <sub>4</sub> N <sub>2</sub> O <sup>+</sup> (NC) <sub>2</sub> C=C=O	(10.56) IP is onset of phot	(300) oelectron b	(1255) and (80HOT/	56.5 NEI).	236	*EST	4361-47-1

Table 1. Positive Ion Table - Continued

=	•		-		Neutral reference	CAS registry number		
		RJ/IIIOI				number		
(9.94)	(339)	(1419)	110	460	80SCH/SCH2	54856-36-9		
IP is onset of ph	otoelectron b	and (80SCH/S	SCH2).					
8.27±0.04	48	200	-143±1	-598±4	77PED/RYL	13463-39-3		
See also: 86REU	J/WAN.							
(6.7±1.0)	(339)	(1418)	184±4	772±18	81HAO/GIN	12547-95-4		
		()						
0.4	. 10	( (*)	000 4	000.5	0000000	14517 51 5		
			-209±1	-876±5	82CON/ZAF	14516-54-2		
ir is onset of ph					,			
8.5	(-9)	(-38)	-205±1	-858±5	83ALT/CON	14220-21-4		
IP is onset of ph	otoelectron t	and.						
8.6	(-21)	(-88)	-219±2	-918±10	82CON/ZAF	14100-30-2		
IP is onset of ph								
						<del> </del>		
0.55	( 12)	( 52)	210.4	077.10	92 A L TYCON	14000 01 5		
			-210±4	-0//±10	83ALI/CON	14099-01-5		
(7.8)	(65)	(273)	-115	-480	*EST	66517-47-3		
IP is onset of ph	otoelectron b	and (82BOH/0	GLE).					
7.96±0.01	10	43	-173±2	-725±7	82PIL/SKI	13463-40-6		
	( <del>-</del> 10)	(-40)						
From proton aff			-40-6). PA =	~202 kcal/mol	, -845 kJ/mol.			
pro		- /3 (-11 · 10 / 100			, 5,0 12,11011			
8.5±0.1	19	80	-177±2	-740±10	82CON/ZAF	16972-33-1		
(~11.55)	(390)	(1632)	124	518	82CHU/NGU	997-76-2		
				<del></del>				
•	(_12)	(_\$1)						
From menton of			)72_33_1\ D^	= (201) bool/	nol			
	From proton affinity of HMn(CO) <sub>5</sub> (RN 16972-33-1). PA = (201) kcal/mol, (841) kJ/mol.							
	(9.94) IP is onset of ph  8.27±0.04 See also: 86REU  (6.7±1.0) IP from 81HAC  8.4 IP is onset of ph  8.5 IP is onset of ph  (7.8) IP is onset of ph  (7.8) IP is onset of ph  7.96±0.01 See also: 83HAI  From proton aff  8.5±0.1  (-11.55)	(9.94) (339) IP is onset of photoelectron be see also: 86REU/WAN.  (6.7±1.0) (339) IP from 81HAQ/GIN.  8.4 (-16) IP is onset of photoelectron be seed of photoelectron be s	eV kcal/mol kJ/mol  (9.94) (339) (1419) IP is onset of photoelectron band (80SCH/S  8.27±0.04	eV kcal/mol kJ/mol kcal/mol  (9.94) (339) (1419) 110  IP is onset of photoelectron band (80SCH/SCH2).  8.27±0.04 48 200 -143±1  See also: 86REU/WAN.  (6.7±1.0) (339) (1418) 184±4  IP from 81HAQ/GIN.  8.4 (-16) (-65) -209±1  IP is onset of photoelectron band.  8.5 (-9) (-38) -205±1  IP is onset of photoelectron band.  8.6 (-21) (-88) -219±2  IP is onset of photoelectron band.  (7.8) (65) (273) -115  IP is onset of photoelectron band (82BOH/GLE).  7.96±0.01 10 43 -173±2  See also: 83HAR/OHN.  (-10) (-40)  From proton affinity of Fe(CO) <sub>5</sub> (RN 13463-40-6). PA =  8.5±0.1 19 80 -177±2  (-11.55) (390) (1632) 124	eV kcal/mol kJ/mol kcal/mol kJ/mol  (9.94) (339) (1419) 110 460  IP is onset of photoelectron band (80SCH/SCH2).  8.27±0.04 48 200 -143±1 -598±4  See also: 86RBU/WAN.  (6.7±1.0) (339) (1418) 184±4 772±18  IP from 81HAQ/GIN.  8.4 (-16) (-65) -209±1 -876±5  IP is onset of photoelectron band.  8.5 (-9) (-38) -205±1 -858±5  IP is onset of photoelectron band.  8.6 (-21) (-88) -219±2 -918±10  IP is onset of photoelectron band.  8.5 (-12) (-52) -210±4 -877±18  IP is onset of photoelectron band.  (7.8) (65) (273) -115 -480  IP is onset of photoelectron band (82BOH/GLE).  7.96±0.01 10 43 -173±2 -725±7  See also: 83HAR/OHN.  (-10) (-40)  From proton affinity of Fe(CO) <sub>5</sub> (RN 13463-40-6). PA = -202 kcal/mol  8.5±0.1 19 80 -177±2 -740±10  (-11.55) (390) (1632) 124 518	eV kcal/mol kJ/mol kcal/mol kJ/mol reference  (9.94) (339) (1419) 110 460 80SCH/SCH2  IP is onset of photoelectron band (80SCH/SCH2).  8.27±0.04 48 200 -143±1 -598±4 77PED/RYL  See also: 86REU/WAN.  (6.7±1.0) (339) (1418) 184±4 772±18 81HAQ/GIN  IP from 81HAQ/GIN.  8.4 (-16) (-65) -209±1 -876±5 82CON/ZAF  IP is onset of photoelectron band.  8.5 (-9) (-38) -205±1 -858±5 83ALT/CON  IP is onset of photoelectron band.  8.6 (-21) (-88) -219±2 -918±10 82CON/ZAF  IP is onset of photoelectron band.  8.55 (-12) (-52) -210±4 -877±18 83ALT/CON  IP is onset of photoelectron band.  (7.8) (65) (273) -115 -480 *EST  IP is onset of photoelectron band (82BOH/GLE).  7.96±0.01 10 43 -173±2 -725±7 82PIL/SKI  See also: 83HAR/OHN.  (-10) (-40)  From proton affinity of Fe(CO) <sub>5</sub> (RN 13463-40-6). PA = -202 kcal/mol, -845 kJ/mol.  8.5±0.1 19 80 -177±2 -740±10 82CON/ZAF		

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve ion Table -	- Contin	uea 		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>2</sub> O <sub>3</sub> +	(9.3) IP is onset of pho	(144) otoelectron	(603) band (82GLE/DC	-70 0B).	-294	*EST	15548-56-8
C <sub>5</sub> H <sub>3</sub> Cl <sup>+</sup> CH <sub>3</sub> C=CC=CCl	9.19±0.01 IP from 84KLA/I	(321) KUH.	(1342)	110±0.2	459±1	*EST	
C <sub>5</sub> H <sub>3</sub> NO <sup>+</sup>	(≤9.47±0.05)	(≤243)	(≤1018)	25	104	•EST	617-90-3
C <sub>5</sub> H <sub>3</sub> NS <sup>+</sup>	(9.83±0.05)	(293)	(1226)	66	278	*EST	1003-31-2
C <sub>5</sub> H <sub>4</sub> + CH <sub>2</sub> =C=C=C=CH <sub>2</sub>	(8.67)	(315)	(1318)	115	481	*EST	21986-03-8
CH≖CCH <sub>2</sub> C≖CH	10.1 IP from 83HOL.	(338)	(1413)	105	439	*EST	24442-69-1
CH <sub>3</sub> C≡CC≖CH	9.4 IP from 81FOR/N	(318) MAI. See als	(1332) so: 81MAI.	101	425	*EST	4911-55-1
C <sub>5</sub> H <sub>4</sub> BrN <sup>+</sup>	9.65±0.05	(261)	(1092)	38	161	*EST	109-04-6
© Br	(9.75±0.1)	(263)	(1102)	38	161	*EST	626-55-1
	9.94±0.05	(268)	(1120)	38	161	*est	1120-87-2

Table 1. Positive Ion Table - Continued

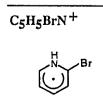
Table 1. Positive Ion Table - Continued												
ION Neutral	Ionization potenti	•	I(Ion) ol kI/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number					
C <sub>5</sub> H <sub>4</sub> CIN <sup>+</sup>												
Q <sub>N</sub> c <sub>1</sub>	9.0 IP is onset of p	(232) photoelectro	(971) n band (81MOE	25 9/DIS2).	103	•EST	109-09-1					
QN C1	9.1 IP is onset of p	(236) hotoelectro	(986) n band (81MOD	26 (/DIS2).	108	*EST	626-60-8					
NO CI	9.5 IP is onset of p	(245) hotoelectro	(1025) n band (81MOD	26 /DIS2).	108	*EST	626-61-9					
C <sub>5</sub> H <sub>4</sub> ClN <sub>4</sub> <sup>+</sup>												
(N) HT	From proton at ~870 kJ/mol.	(200) finity of 6-c	(839) hloropurine (RN	187-42-3). P.	A = ~208 kcal/r	noi,						
C <sub>5</sub> H <sub>4</sub> FN <sup>+</sup>			*****									
Q <sub>N</sub> <sub>F</sub>	(9.4) IP is onset of pl	(201) notoelectron	(839) a band (83PIA/K	-16 EL).	<b>-</b> 68	*EST	372-48-5					
C <sub>5</sub> H <sub>4</sub> N <sub>2</sub> +				<del></del>		· · · · · · · · · · · · · · · · · · ·						
Ne N	(8.09±0.01)	(277)	(1161)	91±4	380±16	*EST	1192-27-4					
C <sub>5</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> +												
C <sub>5</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> +	(10.3±0.1)	(270)	(1130)	33	136	*EST	2530-26-9					
OzN ON	(10.4)	(273)	(1140)	33	137	*EST	1122-61-8					

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>5</sub> H <sub>4</sub> N <sub>2</sub> O <sub>3</sub> +	(9.03±0.02)	(222)	(930)	14	59	*EST	1124-82-9				
C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> +	(≤9.52±0.03)	(≤275)	(≤1149)	55	230	*EST	120-73-0				
C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> O +	(≤8.55±0.03)	(≤209)	(≤875)	12	50	77PED/RYL	68-94-0				
C <sub>5</sub> H <sub>4</sub> O <sup>+</sup>	(9.49)	(211)	(881)	8±8	-35±35	*EST	13177-38-3				
C <sub>5</sub> H <sub>4</sub> OS <sup>+</sup>	(≤9.37±0.05)	(≤222)	(≤928)	6	24	*EST	98-03-3				
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub> +	9.35±0.05	(176)	(733)	~40	-169	*EST	108-97-4				
0 0	(9.6) IP is onset of phot	(168) coelectron b	(704) pand (82GLI	-53 3∕DOB).	-222	*EST	930-60-9				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
С <sub>5</sub> H <sub>4</sub> O <sub>2</sub> +	9.21±0.01	176	738	−36±1	−151±5	77PED/RYL	98-01-1
С <sub>5</sub> H <sub>4</sub> O <sub>3</sub> <sup>+</sup>	(≤9.16±0.05)	(≤118)	(≤493)	−93±0.7	-391±3	77PED/RYL	488-93-7
O CH3	(10.7) IP is onset of pho	(140) toelectron b	(585) eand (81KIM/		5 -447.2±2.5	77PED/RYL	616-02-4
C <sub>5</sub> H <sub>4</sub> S+	(8.4) IP is onset of phot	(239) coelectron b	(1000) and (81SCH/	45 SCH).	190	*EST	77825-99-1
C <sub>5</sub> H <sub>5</sub> <sup>+</sup> HC=CCHCH = CH <sub>2</sub>	7.88 IP from 84LOS/H	271 OL.	1132	89	372	82MCM/GOL	50706-18-8
	8.41	(252)	(1052)	58±1	241±6	82MCM/GOL	62744-94-9
CH=CH <sub>2</sub>	From appearance o	(242) energy from	(1012) C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> <sup>+</sup>	precursor, 3.55	eV (78MCC/	FRE).	
C <sub>5</sub> H <sub>5</sub> BrN <sup>+</sup>			<u>.</u>				



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From proton affinity of 2-bromopyridine (RN 109-04-6).

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion kcal/mol		Δ <sub>f</sub> H(Ne- kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>5</sub> BrN <sup>+</sup>	From proton affin		791 opyridine (R	N 626-55-1).			
Br NH	From proton affin		779 opyridine (R	N 1120-87-2).	`		
C <sub>5</sub> H <sub>5</sub> Br <sub>3</sub> Ti +	(9.1) IP is onset of phot		(428) nd (84TER/L	108 .OU).	-450	•EST	12240-42-5
C <sub>5</sub> H <sub>5</sub> CIN <sup>+</sup>	From proton affin 897. kJ/mol.		736 opyridine (R	N 109-09-1). P	A = 214.4 kc	al/mol,	
E ZH	From proton affin 899. kJ/mol.		739 opyridine (RI	N 626-60-8). P	A = 214.8 kc	al/mol,	
HN CI	From proton affin 911 kJ/mol.		727 opyridine (RI	N 626-61-9). P	A = 217.8 kc	al/mol,	
C <sub>5</sub> H <sub>5</sub> Cl <sub>3</sub> Ti +  Cl Ti Cl	(9.1) IP is onset of phot		(319) nd (84TER/L	-133±3 .OU).	~559±12	77PED/RYL	1270-98-0

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number					
C <sub>5</sub> H <sub>5</sub> FN <sup>+</sup>	From proton affin 881 kJ/mol.	139 ity of 2-fluo	581 propyridine (RN	372-48-5). I	<sup>2</sup> A = 210.6 kcal/n	nol,						
F F	From proton affin 897. kJ/mol.	138 ity of 3-fluo	577 propyridine (RN	372-47-4). I	PA = 214.3 kcal/n	nol,						
F NH	From proton affin 906. kJ/mol.	135 ity of 4-fluo	567 propyridine (RN	694-52-0). I	PA = 216.6 kcal/n	nol,						
C <sub>5</sub> H <sub>5</sub> F <sub>3</sub> O <sub>2</sub> + CF <sub>3</sub> COH = CHCOCH <sub>3</sub>	(9.5) IP is onset of phot	(-20.7) oelectron t	(-86.7) pand.	-239.8	-1003.3	84ERA/KOL	367-57-7					
C <sub>5</sub> H <sub>5</sub> N <sup>+</sup>												
	9.25 See also: 83PIA/K	247 EL, 82LIF,	1032 81KIM/KAT.	33±0.2	140±1	79KUD/KUD3	110-86-1					
C <sub>5</sub> H <sub>5</sub> NO <sup>+</sup>												
© <sub>NO</sub>	8.38±0.02	(207)	(869)	14	61	*EST	694-59-7					
(NH)	(8.4) IP is onset of phot	(176) oelectron b	(733) and.	-18±0.5	-77±2	82SUR/ELS	142-08-5					
OH OH	8.6 IP is onset of phot	(179) oelectron b	(750) and.	-19±0.5	-80±2	82SUR/ELS	109-10-4					

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued												
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number						
C <sub>5</sub> H <sub>5</sub> NO <sup>+</sup>	(≤9.15±0.03)	(≤200)	(≤839)	-11±0.5	-44±2	82SUR/ELS	109-00-2						
NO OH	9.75±0.11	(215)	(900)	-10±0.5	-41±2	82SUR/ELS	626-64-2						
C <sub>5</sub> H <sub>5</sub> NO <sub>2</sub> +													
OH OH	(8.90±0.05)	(167)	(699)	-38	-160	*EST							
ОН	(8.60±0.05)	(168)	(706)	-30	-124	*EST	6602-28-4						
v													
OL OH	(8.18±0.05)	(160)	(668)	-29	-121	*EST	6890-62-6						
C <sub>5</sub> H <sub>5</sub> NS <sup>+</sup>	<del></del>	<u>-</u>	·										
N	(7.7) IP is onset of pho	(220) otoelectron	(921) band.	43	178	*EST	2637-34-5						
Q SH	≤8.7 IP from 81DRE/	(≤230) BEC, 82LE	(≤963) 3V/LIA.	30	124	*EST	73018-10-7						
SH	(≤8.89±0.03)	(≤239)	( <b>≤</b> 999)	34	141	•EST	16133-26-9						

Table 1	Positive	Ion Table	- Contin	han

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	Ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>5</sub> H <sub>5</sub> NS <sup>+</sup>	≤9.25±0.03	(≤247)	(≤1033)	34	141	*EST	4556-23-4				
C <sub>5</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> +											
O <sub>2</sub> N NH	From proton affin 872. kJ/mol.	190 nity of 4-ni	795 tropyridine (RI	N 1122-61-8). I	PA = 208.5 kc	al/mol,					
C <sub>5</sub> H <sub>5</sub> N <sub>4</sub> <sup>+</sup>					·						
(N) H+	From proton affin 917.5 kJ/mol.	201 nity of 9H-	843 purine (RN 120	0-73-0). PA =	219.3 kcal/mo	l,					
C <sub>5</sub> H <sub>5</sub> N <sub>4</sub> O <sup>+</sup>											
O N	+ From proton affin	(161) nity of hypo	(673) exanthine (RN	68-94-0). PA :	= ~217 kcal/m	ol,					
C <sub>5</sub> H <sub>5</sub> N <sub>5</sub> +											
NHN NHN	(7.8) IP is onset of pho	(229) toelectron	(960) band.	49±2	207±8	83KIR/DOM	73-24-5				
C <sub>5</sub> H <sub>5</sub> N <sub>5</sub> O <sup>+</sup>					<del></del>						
H <sub>2</sub> N N N	(7.85)	(181)	(759)	0.5	2	77PED/RYL	73-40-5				
$C_5H_6^+$ $CH_2=C=CHCH=CH_2$	(8.88)	(265)	(1108)	60	251	*EST	10563-01-6				
(Z)-CH <sub>3</sub> CH = CHC≡CH	9.14±0.04	272	1138	61±1	256±6	78SHA	1574-40-9				
(E)-CH <sub>3</sub> CH = CHC≡CH	(9.05)	(270)	(1130)	61±0.7	257±3	78SHA	2004-69-5				
CH <sub>2</sub> =CHC≡CCH <sub>3</sub>	9.00±0.01	(267)	(1118)	(60)	(250)	*EST	646-05-9				

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	ve Ion Table	- Contin	iuea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>5</sub> H <sub>6</sub> <sup>+</sup> CH <sub>2</sub> =C(CH <sub>3</sub> )C=CH	9.23±0.01	275	1148	62	258	77LEB/RYA	78-80-8
	8.56±0.01	229	957	31±1	131±4	77PED/RYL	542-92-7
с≕сн	(8.7) IP is onset of photon	(275) toelectron t	(1152) pand.	75	313	*EST	6746-94-7
	(8.0)	(264)	(1103)	79	331	*EST	5164-35-2
	9.74 IP from 85HON/F	308 HUB.	1291	84±1	351±4	85WIB/DAI	35634-10-7
C <sub>5</sub> H <sub>6</sub> N <sup>+</sup>				***************************************	<del></del>		
	From proton affin	178 lity of pyrid	746 ine (RN 110-86	-1). PA = 22	0.8 kcal/mol, 9	24 kJ/mol.	
C <sub>5</sub> H <sub>6</sub> NO <sup>+</sup>							
©N-OH	From proton affin 922. kJ/mol.	160 ity of pyrid	669 ine-N-oxide (RI	<b>N 694-59-7).</b> 1	PA = 220.3 kc	al/mol,	
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> <sup>+</sup>	2		***				
NH <sub>2</sub>	(8.0) IP is onset of phot	(213) oelectron b	(890) and (82LEV/L	28±0.2 IA, 82GUI/K	118±1 HA).	84BIC/PIL	504-29-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential Δ <sub>f</sub> H(Ion)  eV kcal/mol kJ/mol				eutral) l kJ/mol	Neutral reference	CAS registry
		KCAI/IIIO	- KJ/IIIOI	kcal/mo		reference	
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> +							
O <sub>NH2</sub>	(8.1) IP is onset of pho	(221) toelectron	(926) band.	34±0.5	144±2	84BIC/PIL	462-08-8
H <sub>2</sub> N N	(8.4) IP is onset of pho affinity considerat						504-24-5
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> O <sup>+</sup>							
NH2	(8.04±0.05)	(197)	(825)	12	49	*EST	14150-95-9
Q NH2	(8.21±0.05)	(204)	(853)	15	61	•EST	1657-32-5
O							
H <sub>2</sub> N NO	(7.67±0.05)	(191)	(797)	14	57	*EST	3535-75-9
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> +						· · · · · · · · · · · · · · · · · · ·	
H3C NH	(8.8) IP from onset of p	(124) hotoelecti	(520) ron band.	-79±1	-329±4	77NAB/SAB	65-71-4
C <sub>5</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> S <sup>+</sup>							
S—N	8.6	(152)	(635)	<del>-4</del> 7	-195	*EST	21035-65-4

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
$C_5H_6N_2O_3^+$ $C_{H_3}^{C_{H_3}}$ $C_{H_3}^{C_{H_3}}$	10.19 IP from 85ROT/B	(≤124) OC.	(≤519)	-111	-464	*EST	5176-82-9		
$ \begin{array}{c} C_5H_6N_5^+ \\ \begin{pmatrix} N_1+2 \\ N_2 \\ N_1 \end{pmatrix} \\ H^+ \end{array} $	From proton affin	191 ity of aden	802 ine (RN 73-24-5	). PA = 223	5.5 kcal/mol, 93	5. kJ/mol.			
$ \begin{array}{c c} C_5H_6N_5O^+ \\  & \\  & \\  & \\  & \\  & \\  & \\  & \\  $	<sup>†</sup> From proton affin	(143) ity of guani	(599) ine (RN 73-40-5	). PA = ~22	3 kcal/mol, ~9	33 kJ/mol.			
C <sub>5</sub> H <sub>6</sub> O +	8.4 IP from 86SPI/GR	(192) U.	(803)	-2±1	−7±5	*EST	289-65-6		
0	≤9.34±0.02	(≤196)	(≤823)	-19	<b>-7</b> 8	*EST	930-30-3		
Отснз	8.39±0.01 IP from 78LIA/AU	(174) JS, 77ROS	(730) /DRA. See also:	–19 83ZYK/ER	–80 C, 86SPI/GRU	*EST	534-22-5		
СНЗ	(8.64) IP from 86SPI/GR	(182) U.	(763)	-17	-71	*EST	930-27-8		

Table 1. Positive Ion Table - Continued

Table 1. Tostere for Table Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>5</sub> H <sub>6</sub> OS <sup>+</sup>											
S OCH3	(7.8) IP is onset of pho	(131) toelectron b	(547) pand (85BAJ/HU	–49 M).	-206	*EST	16839-97-7				
C <sub>5</sub> H <sub>6</sub> OS <sub>2</sub> <sup>+</sup>						- A 1, 1, 1, 1					
H <sub>3</sub> C S O	(≤8.5) IP from 83SCH/S	(≤177) CH.	(≤740)	-19	-80	*EST	49675-88-9				
C <sub>5</sub> H <sub>6</sub> O <sub>3</sub> + CH <sub>3</sub> (CO) <sub>3</sub> CH <sub>3</sub>	(≤9.52)	(≤115)	(≤482)	-104	-437	*EST	921-11-9				
C <sub>5</sub> H <sub>6</sub> S <sup>+</sup>				*	· · · · · · · · · · · · · · · · · · ·						
SCH3	8.61±0.02	218	914	20.0±0.2	83.5±0.8	77PED/RYL	554-14-3				
CH <sub>3</sub>	(8.40)	(213)	(893)	19.7±0.2	82.6±0.8	77PED/RYL	616-44-4				
S	(7.9) IP is onset of pho	(224) toelectron b	(940) and.	42±2	178±8	*EST	289-70-3				
C <sub>5</sub> H <sub>6</sub> Si <sup>+</sup>											
H <sub>Si</sub>	(7.8) IP is onset of pho	(197) toelectron b	(824) and (84BOC/RO	17 S).	71	83GOR/BOU	289-77-0				
1	D 24	Q	. Ha	all Cit Ci	1- CH.						
$C_5H_7^+$ $CH_2 = CHCHCH = CH_2$	FW SELLY RN (7.25) See also: 80WOL	(220)	(922)	CH2C14C1	222	69GOL/BEN	14362-08-4				
HC≡CC(CH <sub>3</sub> ) <sub>2</sub>	(7.44) See also: 80WOL	(234) /HOL.	(981)	63	263	76LOS/TRA	56897-57-5				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>5</sub> H <sub>7</sub> +							1			
	7.00 Proton affinity of $\alpha$ leads to $\Delta_f H(\text{Ion})$					70FUR/GOL I, 835. kJ/mol)	54846-63-8			
C <sub>5</sub> H <sub>7</sub> N <sup>+</sup>										
CH3	7.94±0.02	207.6	869.2	24.6±0.1	103.1±0.5	77PED/RYL	96-54-8			
CH3	(7.78±0.01)	(197)	(825)	18±0.2	74±1	*EST	636-41-9			
C <sub>5</sub> H <sub>7</sub> N <sub>2</sub> +										
W NH2	From proton affini 936. kJ/mol.	170 ty of 2-py	711 ridinamine (RN	I 504-29-0). Pa	A = 223.8 kca	l/moi,				
NH2	From proton affini 925. kJ/mol.	179 ty of 3-py	747 vridinamine (RN	I 462-08-8). P <i>i</i>	A = 221.0 kca	l/mol,				
H <sub>2</sub> N ONH	From proton affinit (962) kJ/mol.	(169) ty of 4-py	(706) ridinamine (RN	504-24-5). P <i>e</i>	A = (230) kca	l/mol,				
C <sub>5</sub> H <sub>7</sub> N <sub>3</sub> + N N CH <sub>3</sub>	(≤9.5) ( IP from 83GLE/SP.	(≤302) A.	(≤1263)	83	346	*EST	86402-31-5			
H <sub>3</sub> C CH <sub>3</sub>	(≤9.5) ( IP from 83GLE/SP.	(≤300) A.	(≤1257)	81	340	*EST	77202-09-6			

Table 1	Positive	Ion Table	_	Continued
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ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	∆ <sub>f</sub> H(Net kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>5</sub> H <sub>7</sub> N <sub>3</sub> +  H <sub>3</sub> C  N  CH <sub>3</sub>	(≤9.02)	(≤268)	(≤1123)	60	253	*EST	24108-34-7
NN CH3	(≤9.15)	(≤274)	(≤1145)	63	262	*EST	21134-90-7
C <sub>5</sub> H <sub>7</sub> O <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> C = CHCO	$\Delta_{\hat{l}}H$ (Ion) from a	(138) ppearance p	(577) otential deter	rmination (85AL	.A/ATT).		44391-34-6
H <sub>2</sub> CH <sub>3</sub>	From proton affi 86SAN/BAL). P				OU/ROL, 86N	MAU/LIE,	
0 . H <sub>2</sub> CH <sub>3</sub>	From proton affi PA = 204.0 kcal/	-	-	N 930-27-8) (85H	OU/ROL).		
C <sub>5</sub> H <sub>7</sub> S + H <sub>2</sub> S CH <sub>3</sub>	From proton affi PA = 205.4 kcal/	-		e (RN 554-14-3) (	(86MAU).		
$C_5H_8^+$ $CH_2 = C = CHCH_2CH_3$	9.22	246	1030	33.6±0.2	140.7±0.6	77PED/RYL	591-95-7
(Z)-CH <sub>2</sub> = CHCH = CHCH	8.63±0.03 IP from 81MAS/	218 MOU.	914	19.4±0.2	81.1±1.0	77PED/RYL	1574-41-0
(E)-CH <sub>2</sub> = CHCH = CHCH	8.59±0.02 IP from 81MAS/	216 MOU.	905	18.2±0.1	76.3±0.6	77PED/RYL	2004-70-8
CH <sub>2</sub> =CHCH <sub>2</sub> CH=CH <sub>2</sub>	(9.62±0.02)	(247)	(1034)	25.3±0.2	105.7±0.6	77PED/RYL	591-93-5
CH <sub>3</sub> CH = C = CHCH <sub>3</sub>	(8.7) IP is onset of pho	(232) stoelectron t	(972) pand.	31.8±0.2	133.1±0.7	77PED/RYL	591-96-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
$C_5H_8^+$ $CH_2 = C(CH_3)CH = CH_2$	8.84±0.01 See also: 81MAS,	221.8 /MOU.	927.9	17.9±.2	75±1 ·	77PED/RYL	78-79-5			
C <sub>3</sub> H <sub>7</sub> C≖CH .	10.05 IP from 81HOL/I	266 FIN.	1114	34.4±1	144±4	79ROG/DAG	627-19-0			
C <sub>2</sub> H <sub>5</sub> C≖CCH <sub>3</sub>	9.44±0.01	248	1039	30.6±1	128±4	79ROG/DAG	627-21-4			
(СН <sub>3</sub> ) <sub>2</sub> СНС≖СН	9.97 IP from 81HOL/I	262 FIN.	1098	32.5	136	69BEN/CRU	598-23-2			
	9.01±0.02 See also: 81KIM/I	216 KAT.	905	8.6	36	82ALL/DOD	142-29-0			
CH <sub>2</sub>	9.16±0.02	241	1008	29.6±.2	124±1	78LEB/TSV	1120-56-5			
сн <u>е</u> сн <sub>2</sub>	(8.7)	(236)	(988)	35.6±.2	149±1	77PED/RYL	693-86-7			
	(8.7±0.1)	(238)	(997)	37.8	158	82WIB/WEN	185-94-4			
	(9.65)	(272)	(1139)	49.7	208	82WIB/WEN	311-75-1			
$\triangleright$	9.26 See also: 86GLE/k	258 KRE.	1078	44.2±0.2	185.1±0.7	77PED/RYL	157-40-4			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>8</sub> Br <sub>2</sub> +			*				
Br	10.06	(218)	(913)	-14	-58	*EST	10230-26-9
Br Br	(10.02±0.02)	(217)	(909)	-14	-58	*EST	33547-17-0
C <sub>5</sub> H <sub>8</sub> F <sub>3</sub> O <sub>2</sub> +				<u>.                                    </u>			
CF <sub>3</sub> C(OH)O(n-C <sub>3</sub> H <sub>7</sub> )		<b>-7</b> 4	-311				
	From proton affir	nity of CF <sub>3</sub> C	COO(n-C <sub>3</sub> H <sub>7</sub> ) (F	RN 383-66-4)	) <b>.</b>		
C <sub>5</sub> H <sub>8</sub> N <sub>2</sub> +							
CH <sub>3</sub>	(≤8.38)	(≤224)	(≤936)	30	127	*EST	1739-84-0
A	8.45±0.04	244	1022	49±0.7	207±3	80ENG	2721-32-6
C <sub>5</sub> H <sub>8</sub> N <sub>2</sub> O <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		
ON O	(9.2) IP is onset of photon	(243) toelectron b	(1015) and.	30.55±0.3	127.8±1.4	83BYS	22509-00-8
$C_5H_8O^+$ (E)- $CH_3CH_2CH = CHCHO$	O (9.70)	(194)	(810)	<del>-</del> 30	-126	83HOL	764-39-6
	()	()	()				
CH <sub>3</sub> CH = C(CH <sub>3</sub> )CHO	(9.60)	(188)	(787)	-33	-139	83HOL	497-03-0
$C_2H_5COCH = CH_2$	(9.50)	(186)	(781)	-33	-136	83HOL	1629-58-9
(E)-CH <sub>3</sub> CH = CHC( = 0)C	CH <sub>3</sub> (9.39)	(175)	(732)	-42	-174	84BOU/HOP	625-33-2
$CH_2 = C(CH_3)C(=0)CH_3$	(9.50)	(177)	(741)	<b>-42</b>	-176	84BOU/HOP	814-78-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	-	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No	cutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>5</sub> H <sub>8</sub> O <sup>+</sup>											
(E)-CH <sub>3</sub> OCH = CHCH = $(E)$	_										
	(8.03)	(222)	(931)	37	156	*EST	10034-09-0				
<b>.</b>	8.34±0.01	162	679	−29.9±0.4	-125.2±1.5	77PED/RYL	110-87-2				
°	9.25±0.01 See also: 82BIE//	167 ASB.	698	~46±0.5	-194±2	77PED/RYL	120-92-3				
CH3	9.46	190	794	-28±0.2	-119±1	83FUC/SMI	765-43-5				
$C_5H_8OS^+$ (Z)- $CH_3C(=S)CH=C(OH_3)$	H)CH <sub>3</sub> (8.4) IP is onset of pho	(160) toelectron	(670) band (81JOR/0	-33 CAR).	-140	*EST	73059-87-7				
(Z)-CH <sub>3</sub> C=(SH)CHC(=C	D)CH <sub>a</sub>										
(=) 51135 (511)6116(= 6	(≤8.73) IP from 81JOR/C	(≤168) AR.	(≤702)	-33	-140	*EST	65581-04-6				
S 0	(8.90±0.05)	(168)	(704)	−37±0.7	-155±3	77PED/RYL	1072-72-6				
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub> +											
$C_2H_5CH = CHCOOH$	(10.14)	(144)	(601)	-90±2	−377±8	*EST	626-98-2				
(CH <sub>3</sub> ) <sub>2</sub> C=CHCOOH	(9.63)	(124)	(519)	-98	-410	•EST	541-47-9				
CH <sub>3</sub> CH = C(CH <sub>3</sub> )COOH	(9.50)	(121)	(507)	-98	<b>-</b> 410	*EST	13201-46-2				
CH <sub>2</sub> = C(C <sub>2</sub> H <sub>5</sub> )COOH	(10.06)	(139)	(582)	-93	-389	*EST	3586-58-1				
CH <sub>2</sub> = C(CH <sub>3</sub> )CH <sub>2</sub> COOH	(9.52)	(128)	(536)	-92	-383	•EST	53774-20-2				

Table 1. Positive Ion Table - Continued

			*				
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub> +						- "	
CH <sub>3</sub> CH = CHCH <sub>2</sub> COOH	(9.41)	(126)	(527)	-91	-381	*EST	1617-32-9
$CH_2 = CHCOOC_2H_5$	(>10.3) IP from 82MOR/I	(>147) MER.	(>617)	-90	-377	*EST	140-88-5
$CH_2 = C(CH_3)COOCH_3$	(9.7) IP is onset of pho	(141) toelectron b	(588) and(78VAN/OS	-83 K).	-348	80VIL/PER	80-62-6
CH <sub>3</sub> COCH <sub>2</sub> COCH <sub>3</sub>	8.85±0.02 Enol form, CH <sub>3</sub> C	112 OCH = C(C	470 DH)CH <sub>3</sub> , is prefe	-92±0.2	-384±1	79HAC/PIL	123-54-6
$CH_2 = C(CH_3)OC(=O)C$	9.1 IP is onset of photo	126 toelectron b	529 and (78VAN/OS	-83 K). See also	-349 o: 82LEV/LIA.	77PED/RYL	108-22-5 -591-87-7
	≤9.54 IP from 82ZVE/V	(≤163) IL.	(≤682)	-57	-238	*EST	5417-32-3
соон	(10.35)	(154)	(645)	-85	-354	*EST	3721-95-7
C <sub>5</sub> H <sub>8</sub> Si <sup>+</sup>							
H Si H	(9.1) IP is onset of phot	(238) coelectron b	(997) and (84BOC/RO	28 S).	119	*EST	81200-77-3
L							
$C_5H_9^+$ $CH_2 = CHCHCH_2CH_3$	(7.30)	(193)	(810)	25	106	76LOS/TRA	17829-37-7
CH <sub>3</sub> CHCH = CHCH <sub>3</sub>	(7.07) Heat of formation PA = (201.8) kcal		= :	(22) of (E)-1,3-pe	(92) ntadiene (RN 200	76LOS/TRA )4-70-8).	51685-67-7 "
$CH_3CH = CC_2H_5$	From proton affin	200 ity of 2-pen	838 tyne (RN 627-21-	4). PA = (1	196) kcal/mol, (82	0) kJ/mol.	
$(CH_3)_2CCH = CH_2$	(7.13) Heat of formation PA = (200.4) kcal		-	-		76LOS/TRA I 78-79-5).	29791-12-6

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued											
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number				
C <sub>5</sub> H <sub>9</sub> + (CH <sub>3</sub> ) <sub>2</sub> CHC=CH <sub>2</sub>	From proton affi (828) kJ/mol.	(200) nity of 3-med	(838) thyl-1-butyne (	(RN 598-23-2).	PA = (198)	kcal/mol,					
$CH_3CH = C(CH_3)CH_2$	Heat of formatio	190 n of ion fron	797 n appearance	potential meas	urements (84	LOS/HOL).	60288-51-9				
	7.21  Value of $\Delta_f H(Io)$ determinations (* (84LIA/LIE). PA leads to $\Delta_f H(Ne)$	76SOL/FIE, = 183.4 kc	85SHA/SHA) al/mol, 767.5 k	), and from pro J/mol. IP from	ton affinity o	f cyclopentene	3889-74-5				
(CH <sub>3</sub> )H+	From proton affi 841 kJ/mol.	(193) nity of 1-met	(807) hylcyclobuten	e (RN 1489-60	-7). PA = 20	01 kcal/mol,	53249-17-5				
(CH=CH <sub>2</sub> )H+	From proton affi PA = 197.6 kcal/			RN 693-86-7).							
(CH3)H+	From proton affi 849 kJ/mol.	(213) nity of 3,3-di	(890) methylcyclopr	opene (RN 390	07-06-0). PA	= 203 kcal/mol,	63974-90-3				
C <sub>5</sub> H <sub>9</sub> Br <sup>+</sup>	(9.94±0.02)	(213)	(891)	-16	-68	*EST	137-43-9				
C <sub>5</sub> H <sub>9</sub> BrO <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> CBrCOCH <sub>3</sub>	(9.35) IP from 84BOU/	(154) DAG.	(646)	-61	-256	•EST	2649-51-7				
C5H9I+	9.07	(206)	(861)	-3	-14	*EST	1556-18-9				

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C5H9N+ n-C4H9NC	(11.1)	(280)	(1173)	24±0.5	102±2	*EST	2769-64-4			
(CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> C≡CH	(8.17) See also: 81LOG/	(242) TAK.	(1013)	54±1	225±5	*EST	7223-38-3			
Ž,	(8.0) IP is onset of pho	(201) toelectron t	(845) pand.	17	73	74PIH/TAS	694-05-3			
ÇH <sub>3</sub>	(≤8.21±0.05)	(≤216)	(≤907)	27±0.5	115±2	•EST	554-15-4			
	(7.9) IP is onset of pho	(224) toelectron b	(939) pand (81MUL√PF	42 E).	177	*EST				
	(8.0) IP from 81MUL/I	(227) PRE.	(949)	42	177	*EST				
C <sub>5</sub> H <sub>9</sub> NO <sup>+</sup> n-C <sub>4</sub> H <sub>9</sub> NCO	(10.14±0.05)	(186)	(776)	-48	-202	*EST	111-36-4			
tert-C <sub>4</sub> H <sub>9</sub> CNO	≤9.55±0.005	(≤223)	(≤931)	2	10	*EST	27143-81-3			
NOH	(8.92±0.03) IP from 79GOL/k	(193) KUL.	(809)	-12	-52	•EST	1192-28-5			
CH <sub>3</sub>	≤9.17 IP from 85TRE/R	≤161 AD.	≤674	-50	-211	77PED/RYL	872-50-4			
CH <sub>3</sub>	(8.3) IP is onset of photon	(165) coelectron b	(691) and.	-26	-110	•EST	68165-06-0			

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Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>5</sub> H <sub>9</sub> NO <sub>2</sub> +	(8.3)	(104)	(435)	-87±1	-366±4	78SAB/LAF	609-36-9			
COOH .	IP is onset of phot	oelectron b	and(83CAN/I	HAM).						
C <sub>5</sub> H <sub>9</sub> NO <sub>3</sub> + CH <sub>3</sub> CONHCH(CH <sub>3</sub> )COO	Н									
	(9.2) IP is onset of phot	(62) oelectron b	(260) and (83CAN/	-150 HAM).	-628	*EST	97-69-8			
но	(≤9.1) IP from 83CAN/H	(≤87) AM.	(≤362)	-123	-516	77PED/RYL	51-35-4			
C <sub>5</sub> H <sub>9</sub> O <sup>+</sup>										
CH <sub>3</sub> C(OH)C(CH <sub>2</sub> )CH <sub>3</sub>		121	507							
	From proton affini PA = 202.4 kcal/n	ity of CH <sub>3</sub> C	C(=0)C(=C	H <sub>2</sub> )CH <sub>3</sub> (RN 81	14-78-8) (84B	OU/HOP).				
(E)-CH <sub>3</sub> CHCHC(OH)CH <sub>3</sub>	3									
	From proton affini PA = 206.7 kcal/m			(=0)CH <sub>3</sub> (RN	N 625-33-2) (8	4ВОU/НОР).				
		121	506							
OH	From proton affini 832. kJ/mol.	ty of cyclop	entanone (RN	i 120-92-3). PA	= 198.8 kcal	/mol,				
<b>~</b> 0 <b>√</b>	From proton affini			n (RN 110-87-2	) (86BOU/H.	AN).				
O.	PA = 206.9 kcal/m	ol, 866. kJ/r	nol.							
	From proton affini	121 ty of 2-meth	507 yl-4,5-dihydro	furan (RN 1487	7-15-6) (86BC	U/DJA).				
<0 → CH3	PA = 215.6 kcal/m	ol, 902. kJ/n	nol.							

Table 1.	Positive Ion 7	ľable -	Continued

Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C <sub>5</sub> H <sub>9</sub> O <sup>+</sup>									
CH <sub>3</sub>	From proton affin PA = 207.0 kcal/r			rofuran (RN 5.	57-31-3) (86BC	DU/DJA).			
CH3 CCH3	From proton affin PA = 205.1 kcal/n	_	-	one (RN 765-4	3-5).				
С <sub>5</sub> Н <sub>9</sub> О <sub>2</sub> <sup>+</sup> Сн <sub>3</sub> С(ОН)СНС(ОН)СН <sub>3</sub>	From proton affin 869. kJ/mol.	66 ity of CH <sub>3</sub>	277 COCH ≃ C(OI	H)CH <sub>3</sub> (RN 1:	23-54-6). PA =	= 207.8 kcal/mol,			
Ç, OH	From proton affin PA = 202.9 kcal/n	-		e carboxylate (	RN 2868-37-3)				
C <sub>5</sub> H <sub>9</sub> O <sub>3</sub> P <sup>+</sup>									
PO-CH3	(9.2) IP is onset of phot	(76) oelectron l	(317) pand. (77COW	-136 7/GOO).	-571	*EST	1449-91-8		
C <sub>5</sub> H <sub>10</sub> +									
1-C <sub>5</sub> H <sub>10</sub>	9.52±0.02 See also: 83HOL/I	214 221.5	897 <i>926.9</i> A 84BRA/RA	-5.1±0.1 2.0	-21.4±0.4 8.4	84WIB/WAS	109-67-1		
2-(Z)-C <sub>5</sub> H <sub>10</sub>	9.036±0.005 See also: 86TRA.	202.0	845.3	-6.3±0.1	-26.5±0.4	84WIB/WAS	627-20-3		
2-(E)-C <sub>5</sub> H <sub>10</sub>	9.036±0.005	200.8 208.0	840.3 <i>870.1</i>	-7.5±0.1 -0.4	-31.5±0.4 -1.7	84WIB/WAS	646-04-8		
	See also: 84BRA/E	BAE.							
(CH3)2CHCH = CH2	9.52±0.02	213 220.3	891 <i>921.6</i>	-6.5±0.2 0.7	-27.4±0.6 3.1	77PED/RYL	563-45-1		
٠	See also: 84BRA/E	AE.							
$C_2H_5C(CH_3) = CH_2$	9.13±0.03	202 209.3	84 <b>5</b> <i>875.8</i>	-8.5±0.2 -1.2	<b>-35.6±0.7</b> -5.1	77PED/RYL	563-46-2		
	See also: 86TRA, 8	4BRA/BA	E.						

Table 1. Positive Ion Table - Continued

				Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number						
C <sub>5</sub> H <sub>10</sub> + (CH <sub>3</sub> ) <sub>2</sub> C=CHCH <sub>3</sub>	8.68±0.01 See also: 86TRA,	190 <i>197.4</i> 84BRA/BA	795 <i>825.8</i> E.	-10.1±0.1 -2.8	-42.1±0.6 -11.6	77PED/RYL	513-35-9						
<u>.</u>	10.51±0.05 See also: 81MAU	224 <i>231.8</i> /SIE, 81KIM	936 <i>969.8</i> I/KAT, 86TR	-18.7±0.2 - <i>10.6</i> A, 84BRA/BAI	-44.2	77PED/RYL	287-92-3						
СНз	(9.60)	(221)	(923)	-0.7	-3	*est	598-61-8						
¢2 <sup>H</sup> 5	(9.50)	(218)	(912)	-1	<b>-</b> 5	77PED/RYL	1191-96-4						
CH <sub>3</sub>	(9.08) See also: 81PLE/\	(207) /IL.	(868)	-2	-8	77PED/RYL	1630-94-0						
нзс Снз	(9.76±0.02)	(225)	(942)	0	0	77PED/RYL	930-18-7						
нзс .снз	(9.73±0.02)	(223)	(934)	-1	-5	77PED/RYL	2402-06-4						
5H <sub>10</sub> Br <sub>2</sub> + Br(CH <sub>2</sub> ) <sub>5</sub> Br	(≤10.23)	(≤207)	(≤868)	-28	-119	*EST	111-24-0						
5H <sub>10</sub> CIN <sup>+</sup>	(8.5) IP is onset of phot	(208) coelectron be	(871) and.	12	51	*EST	2156-71-0						

Table 1.	Positive	Ion Table	-	Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>5</sub> H <sub>10</sub> N <sup>+</sup>						<del> </del>	
n-C <sub>4</sub> H <sub>9</sub> CNH		174	728				
	From proton affin	ity of n-C <sub>4</sub> F	1 <sub>9</sub> CN (RN 110	)-59-8). PA =	194.0 kcal/mo	ol, 812. kJ/mol.	
t-C <sub>4</sub> H <sub>9</sub> CNH		169	709				
\	From proton affin 819. kJ/mol.	ity of t-C <sub>4</sub> H	9CN (86MAI	VTOP, 86MA	U/KAR). PA	= 195.7 kcal/mol,	
t-C <sub>4</sub> H <sub>9</sub> NCH		178	744				
	From proton affin 868 kJ/mol.	ity of t-C <sub>4</sub> H	<sup>1</sup> 9NC (RN 718	8-38-7) (86M <i>d</i>	AU/KAR). PA	A = 207.5  kcal/mol,	
C <sub>5</sub> H <sub>10</sub> NO <sup>+</sup>							
$\frown$		103	433				
N → OCH3	From proton affin 945. kJ/mol.			ne (RN 5264-3	35-7). PA = 2	25.9 kcal/mol,	
		98	412				
N OH	From proton affin			none (RN 872	-50-4).		
Ċн₃	PA = 216.8  kcal/r	nol, 907. kJ/1	mol.				
C <sub>5</sub> H <sub>10</sub> NO <sub>2</sub> +			· · · · · · · · · · · · · · · · · · ·				
/ H\		58	243				
( N COOH ) H+	From proton affin PA = 220.2 kcal/n	ity of L-prol nol, 921. kJ/i	line (RN 609-3 mol.	6-9).			
C <sub>5</sub> H <sub>10</sub> NO <sub>3</sub> +			***************************************				
CH <sub>3</sub> C(OH)NHCH <sub>2</sub> COOC	:H <sub>3</sub>	8	34				
	From proton affin			OCH <sub>3</sub> . PA =	217.7 kcal/mo	ol, 911. kJ/mol.	
C <sub>5</sub> H <sub>10</sub> NO <sub>4</sub> + L-HOOC(CH <sub>2</sub> ) <sub>2</sub> CH(NH <sub>3</sub> :	соон						
· -DL · · · · · · · ·		29	121				
	From proton affin 906. kJ/mol.	ity of L-HO	OC(CH <sub>2</sub> ) <sub>2</sub> CF	I(NH <sub>2</sub> )COOI	I (RN 617-65-1	2). PA = 216.5 kcal	l/mol,
C <sub>5</sub> H <sub>10</sub> N <sub>2</sub> +		···					
<b>√</b> N>−CH₂	(≤8.78)	(≤264)	(≤1108)	62	261	*EST	6794-96-3
<b>₩</b>							

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table -	Continu	1ea		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>10</sub> N <sub>2</sub> S +							
H3CN NCH3	≤7.95 See also: 80AND,	(≤208) ⁄DEV.	(≤869)	24	102	*EST	13461-16-0
HN N-C2H5	(7.7) IP is onset of pho	(194) toelectron	(813) band (80AND/DE	17 V).	70	*EST	29704-02-7
C <sub>5</sub> H <sub>10</sub> N <sub>4</sub> <sup>+</sup> NCN = C(N(CH <sub>3</sub> ) <sub>2</sub> )(NHCI	(8.2)	(227) toelectron	(950) band (80KLA/BU	38 I).	159	*EST	17686-53-2
C <sub>5</sub> H <sub>10</sub> O +							
n-C <sub>4</sub> H <sub>9</sub> CHO	9.74±0.04 See also: 81HOL	169 /FIN.	709	-55.1±0.5	-230.5±2	77PED/RYL	110-62-3
sec-C <sub>4</sub> H <sub>9</sub> CHO	(9.59±0.01)	(165)	(689)	<b>~5</b> 6	-236	*EST	96-17-3
iso-C <sub>4</sub> H <sub>9</sub> CHO	9.70±0.02 See also: 81HOL	(167) /FIN.	(699)	-57	-237	*EST	590-86-3
tert-C <sub>4</sub> H <sub>9</sub> CHO	9.50	(161)	(673)	-58	-244	*EST	630-19-3
n-C <sub>3</sub> H <sub>7</sub> COCH <sub>3</sub>	9.38±0.01 See also: 84OLI/0	154.4 GUE.	645.9	-61.9±0.2	-259.1±0.8	77PED/RYL	107-87-9
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CO	9.31±0.01 See also: 81HOL	153.0 /FIN.	639.9	-61.7±0.2	-258.4±0.7	77PED/RYL	96-22-0
iso-C <sub>3</sub> H <sub>7</sub> COCH <sub>3</sub>	9.30±0.01	151.8	634.9	-62.7±0.2	-262.4±0.8	77PED/RYL	563-80-4
CH <sub>2</sub> =CHCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> OH	H (9.42±0.05) IP from 83HOL/I	(176) LOS.	(737)	<b>-41</b>	-172	*EST	821-09-0
$CH_2 = CHC(CH_3)_2OH$	(≤9.90)	(≤198)	(≤830)	-30	-125	84GUB/GER	115-18-4
CH <sub>2</sub> =CHCH <sub>2</sub> CH(OH)CH	H <sub>3</sub> (9.38±0.05) IP from 83HOL/I	(171) LOS.	(717)	<b>45</b>	-188	*EST	625-31-0
CH <sub>2</sub> =CHCH(OH)CH <sub>2</sub> CH	H <sub>3</sub> 9.40±0.05 IP from 83HOL/I	(173) LOS. See a	(725) Iso: 84ZWI/HAR.	-43	-182	*EST	616-25-1

Table 1. Positive Ion Table - Continued

					<del></del>	<del></del>	
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Jo kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>10</sub> O <sup>+</sup>							
$CH_2 = CHOCH(CH_3)_2$							
	(≤8.90)	(≤164)	(≤685)	-42±1	-174±5	81TRO/NED	926-65-8
0							
	9.25±0.01	160	669	-53.3±0.2	-223.0±0.7	77PED/RYL	142-68-7
$\smile$	See also: 81KIM/	KAT.					
ОН	9.72	166	695	-58.0±0.3	-242.6±1.2	77PED/RYL	96-41-3
\/	IP from 85TRA.						
C <sub>5</sub> H <sub>10</sub> OS +	· · · · · · · · · · · · · · · · · · ·	,		· · · · · · · · · · · · · · · · · · ·			
CH <sub>3</sub> COCH <sub>2</sub> SCH <sub>2</sub> CH <sub>3</sub>							
	(≤8.72)	(≤153)	(≤638)	<del>-4</del> 9	-203	*EST	20996-62-7
	IP from 84OLI/G	UE.					
$C_5H_{10}O_2^+$							
n-C <sub>4</sub> H <sub>9</sub> COOH	(≤10.53)	(≤126)	(≤526)	-117±0.5	-490±2	77PED/RYL	109-52-4
iso-C <sub>4</sub> H <sub>9</sub> COOH	(≤10.51)	(≤119)	(≤499)	-123±1	-515±6	77PED/RYL	503-74-2
049000	(22002)	(====)	(=)			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
tert-C <sub>4</sub> H <sub>9</sub> COOH	(10.08)	(110)	(460)	-122	-512	*EST	75-98-9
	IP from 81HOL/F	IN.					
HCOO(CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	10.50±0.02	(139)	(583)	-103	-430	*EST	592-84-7
CH <sub>3</sub> COOCH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	10.04±0.03	(123)	(515)	-109	-454	*EST	109-60-4
	10.04±0.03	(123)	(313)	-109	<del>-434</del>	ESI	109-00-4
CH <sub>3</sub> COOCH(CH <sub>3</sub> ) <sub>2</sub>	9.99±0.03	115	482	-115.1±0.1	-481.5±0.6	77PED/RYL	108-21-4
C II COOC II	(10.00.0.00)	(120)	(501)	-111±0.5	464.2	770ED/DVI	105-37-3
C <sub>2</sub> H <sub>5</sub> COOC <sub>2</sub> H <sub>5</sub>	(10.00±0.02)	(120)	(501)	-111±0.5	~404±2	77PED/RYL	103-37-3
n-C <sub>3</sub> H <sub>7</sub> COOCH <sub>3</sub>	10.07±0.03	(124)	(520)	-108	-452	*EST	623-42-7
iso-C <sub>3</sub> H <sub>7</sub> COOCH <sub>3</sub>	9.86	118	495	-109±0.2	-456+1	83FUC/SMI	547-63-1
150-031170000113	IP from 83BUR/H		120	10710.2	10021	302 0 0 0 1 1 1 1	J 17 00-4
· ·	(~0.75)	(~100)	(≤797)	-34	-144	*EST	505-63-5
	(≤9.75)	(≤190)	(3171)	- <del>34</del>	1.4.4	1201	Juj-03-J
_							

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Tab	le - Contin	ued		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub> +	(9.45)	(135)	(565)	-83±0.5	-347±2	77PED/RYL	505-65-7
Сн <sub>3</sub>	(≤10.03) IP from 84ASF/Z	(≤136) YK	(≤570)	-95.1±0.0′	7 ~397.8±2.9	77PED/RYL	626-68-6
СНЗ	(≤10.04) IP from 84ASF/Z	(≤141) YK.	(≤592)	-90.1±0.7	-376.9±3.1	77PED/RYL	1120-97-4
CH3 CH3	(9.2) IP is onset of pho	(120) toelectron t	(502) pand.	-92±0.2	-386±1	*EST	2916-31-6
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub> S +	8.67±0.05 IP from 72CON/C	128 COL.	537	-72	-300	72CON/COL	2094-92-0
C <sub>5</sub> H <sub>10</sub> O <sub>3</sub> P + CH <sub>3</sub>	From proton affin (RN 1449-91-8). I	-	-		ryclo[2.2.2]octa	ne	
C <sub>5</sub> H <sub>10</sub> S + CH <sub>2</sub> =CHCH <sub>2</sub> SC <sub>2</sub> H <sub>5</sub>	(8.51±0.01)	(200)	(839)	4±0.7	18±3	77PED/RYL	5296-62-8
S	(8.2) IP is onset of phot	(174) coelectron b	(730) and (80SAR,	-15.2±0.2 /WOR, 82LEV/I		77PED/RYL	1613-51-0

Table 1. Positive Ion Table - Continued

			te ton table	Conti			
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>5</sub> H <sub>10</sub> S <sub>5</sub> <sup>+</sup>							
\$\_\$\_\$	(7.6) IP is onset of pho	(197) otoelectron t	(823) pand (81BOC/S	22 CH).	90	*EST	2372-99-8
C <sub>5</sub> H <sub>11</sub> + 1-C <sub>5</sub> H <sub>11</sub>	(7.85) $\Delta_{ m f} H({ m Neutral})$ ba personal commu		(812) H] = 100.5 kca	13 l/mol. IP est	56 imated by J.L. He	*EST olmes,	2672-01-7
CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CHCH <sub>3</sub>	(7.1) Cited ionization properties from the formation of ion Experimental valuations.	and neutral.	$\Delta_{\mathbf{f}}H(\text{Neutral})$		50 C-H] = 99 kcal/n	*EST	2492-34-4
(CH <sub>3</sub> ) <sub>2</sub> CCH <sub>2</sub> CH <sub>3</sub>	6.6 ∆ <sub>f</sub> H(Ion) from h (75SOL/FIE, 76C is ∆ <sub>f</sub> H(Ion) -∆ <sub>f</sub> H	OR/MUN).	$\Delta_f H(\text{Neutral})$	based on D	[C-H] = 95.5 kca		4348-35-0
(CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub>	7.88±0.05 IP from 84SCH/F	(190) ΙΟ <b>υ</b> . Δ <sub>f</sub> <i>Η</i> (Ι	(795) Neutral) based (	8 on D[C-H] =	33 2 100.5 kcal/mol.	*EST	3744-21-6
C <sub>5</sub> H <sub>11</sub> Br <sup>+</sup>							
n-C <sub>5</sub> H <sub>11</sub> Br	10.09±0.02	202	844	-30.8±0.3	-129.1±1.4	77PED/RYL	110-53-2
(CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> Br	10.04	196	822	-35	-147	81HOL/FIN	630-17-1
C <sub>5</sub> H <sub>11</sub> ClHg <sup>+</sup> n-C <sub>5</sub> H <sub>11</sub> HgCl	≤9.99 IP from 81BAI/C		(≤835)	-31	-129	*EST	544-15-0
iso-C <sub>5</sub> H <sub>11</sub> HgCl	≤9.95 IP from 81BAI/Cl		(≤823)	-33	-137	*EST	17774-08-2
C <sub>5</sub> H <sub>11</sub> I <sup>+</sup>	**************************************						
n-C <sub>5</sub> H <sub>11</sub> I	9.201	(195)	(816)	-17	-72	*EST	628-17-1
(CH <sub>3</sub> ) <sub>2</sub> C(C <sub>2</sub> H <sub>5</sub> )I	(8.93)	(184)	(769)	-22	-93	*EST	594-38-7
CH <sub>2</sub> ICH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	9.192	(193)	(807)	-19	-80	*EST	541-28-6
$C_5H_{11}N^+$ $C_2H_5CH=NC_2H_5$	(8.7) IP is onset of phot		(839) nd.	0	0	69BEN/CRU	18328-91-1
(CH3)2C = NC2H5	(8.83) See also: 79AUE/I		(816)	-9±2	−36±9	*EST	15673-04-8

Table 1. Positive Ion Table - Continued

				e - Contin			
ION Neutral	Ionization potential	$\Delta_f H(I_0)$ kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>11</sub> N <sup>+</sup>							
$(CH_3)_2NCH_2CH = CH_2$							
	7.84 See also: 81LOC	195 3/7/4/2	813	14	57	70BEN/O'N	2155-94-4
	See also, of Loc	J/ IAR.					
H	0.05 0.05						
(")	8.05±0.05 See also: 82RO2	174 7/HOU	728	-11.7±0.4	-48.9±1.5	77PED/RYL	110-89-4
$\bigvee$							
				•			
$\langle \rangle$	(≤8.41±0.02) Δ <sub>f</sub> H(Ion) from l	(≤193) avdrogen affi	(≤809) nities of home	-0.5±0.5	-2±2 /mol: 746 kY/n	*EST	120-94-5
Ĩ· CH₃	corresponding II			ologues, 170keu	/IIIOI, /40 KB/II	101,	
J,							
,cH <sub>3</sub>							
CH3	(≤8.68±0.02)	(≤201)	(≤842)	1	5	*EST	23132-47-0
Y							
Ċн <sub>3</sub>							
C <sub>5</sub> H <sub>11</sub> NO <sup>+</sup>							······································
(CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> COCH <sub>3</sub>							
	(7.71)	(135)	(567)	<b>~42</b>	-177	81LOG/TAK	15364-56-4
	IP from 81LOG/	TAK. See als	:0: 84ULI/GC	JE.			
$C_5H_{11}NO_2^+$							
H <sub>2</sub> N(CH <sub>2</sub> ) <sub>4</sub> COOH	(≤9.4)	(≤107)	(≤447)	-110±.7	-460±3	83SKO/SAB	660-88-8
n-C <sub>3</sub> H <sub>7</sub> CH(NH <sub>2</sub> )COOH							
	(8.53)	(87)	(364)	-110±2	-459±10	*EST	6600-40-4
L-iso-C <sub>3</sub> H <sub>7</sub> CH(NH <sub>2</sub> )COC	т						
2 20 0311/011(1112)000	(8.71)	(92)	(385)	-108.8±0.2	-455.1±1.0	77PED/RYL	72-18-4
(CII ) NOV CO O CO							
(CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> COOCH <sub>3</sub>	(7.96)	(98)	(411)	-85	-357	81LOG/TAK	7148-06-3
	IP from 81LOG/		()			01200/11111	11.0 00.0
C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> S +							
L-CH <sub>3</sub> SCH <sub>2</sub> CH <sub>2</sub> CH(NH <sub>2</sub> )	)соон						
J _ L . L	(8.3)	(92)	(387)	-99±1	-414±4	81SAB/MIN	59-51-8
	IP is onset of pho	toelectron ba	and (83CAN/	HAM).			
C <sub>5</sub> H <sub>11</sub> N <sub>2</sub> O <sub>3</sub> +			<del></del>				
L-H <sub>2</sub> NCO(CH <sub>2</sub> ) <sub>2</sub> CH(NH <sub>3</sub>	3)СООН						
	From mester offi	73 nitrof L-H-N	304 300(CH-)-C	ים ארא ביו	1 /DNI 505 21 7	N DA - 210 / h	/mal
	914. kJ/mol.	miy or L-F121	-co(cn2)2C	antinus jeuos	1-12-COC PUT) I	7). PA = 218.4 kca	/moi,
							<b></b>

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number				
С <sub>5</sub> H <sub>11</sub> O <sup>+</sup> i-С <sub>3</sub> H <sub>7</sub> C(ОН)СН <sub>3</sub>	From proton affin 841. kJ/mol.	102 427 ity of i-C <sub>3</sub> H <sub>7</sub> COCH <sub>3</sub> (R	N 563-80-4). PA = 201.1 kcal	l/mol,					
n-C <sub>4</sub> H <sub>9</sub> CHOH	From proton affin	118 493 ity of n-C <sub>4</sub> H <sub>9</sub> CHO (RN )	110-62-3). PA = 192.6 kcal/n	nol, 806. kJ/mol.					
(CH <sub>3</sub> ) <sub>2</sub> COC <sub>2</sub> H <sub>5</sub>	From appearance	(104) (435) potential determination (	82MAC).						
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> COH	From proton affin	102 429 ity of (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CO (RN 96	5-22-0). PA = 201.4 kcal/mol	l, 843. kJ/mol.					
C <sub>2</sub> H <sub>5</sub> OCHCH <sub>2</sub> CH <sub>3</sub>	From proton affin (880.) kJ/mol.	(114) (476) ity of C <sub>2</sub> H <sub>5</sub> OCH = CHCI	I <sub>3</sub> (86BOU/DJA). PA = (2:	10.) kcal/mol, 🥌	= North RN check with khed				
С <sub>2</sub> Н <sub>5</sub> О(Н)СН <sub>2</sub> СНСН <sub>2</sub>	From proton affin	(132) (552) ty of C <sub>2</sub> H <sub>5</sub> OCH <sub>2</sub> CH = C	H <sub>2</sub> . CPA = ? ) / RN						
( o )H+	From proton affini 835.5 kJ/mol.	113 472 ty of tetrahydropyran (RI	N 142-68-7). PA = 199.7 kcal	/mol,					
( CH3 )H+	From proton affini 852. kJ/mol.	110 461 ty of 2-methyltetrahydrof	uran (RN 96-47-9). PA = 20	3.6 kcal/mol,					
C <sub>5</sub> H <sub>11</sub> O <sub>2</sub> + HC(OH)(O-n-C <sub>4</sub> H <sub>9</sub> )	From proton affini 815. kJ/mol.	68 285 by of HCOO(n-C <sub>4</sub> H <sub>9</sub> ) (R	N 592-84-7). PA = 194.8 kca	l/mol,					
n-C <sub>3</sub> H <sub>7</sub> C(OH)(OCH <sub>3</sub> )	From proton affinit	57 241 y of C <sub>3</sub> H <sub>7</sub> COOCH <sub>3</sub> (RN	623-42-7). PA = 200.1 kcal/	mol, 837. kJ/mol.					
СН <sub>3</sub> С(ОН)(О-С <sub>3</sub> Н <sub>7</sub> )		57 237 y of CH <sub>3</sub> COOC <sub>3</sub> H <sub>7</sub> (RN	109-60-4). PA = 200.6 kcal/	mol, 839. kJ/mol.					
i-C <sub>3</sub> H <sub>7</sub> C(OH)OCH <sub>3</sub>		55 231 y of i-C <sub>3</sub> H <sub>7</sub> COOCH <sub>3</sub> (R)	N 547-63-7). PA = 201.6 kcal	l/mol, 843. kJ/mol.					

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Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Ionization potential $\Delta_f H(Ion)$ eV kcal/mol kJ/mol		Neutral reference	CAS registry
C <sub>5</sub> H <sub>11</sub> O <sub>3</sub> P +			kcal/mol kJ/mol		
О Р О СН3	(8.7) IP is onset of phot	(22) (93) coelectron band (81ARS/2	-178 -746 ZVE).	*EST	33892-95-4
C <sub>5</sub> H <sub>12</sub> + n-C <sub>5</sub> H <sub>12</sub>	10.35±0.01	204 852 <i>211 884</i> SIE, 82LIA, 81KIM/KAT	-35.0±0.1 -146.5±0.4 -27.3±0.1 -114.2±0.4	77PED/RYL	109-66-0
iso-C <sub>5</sub> H <sub>12</sub>	≤10.22	≤199 ≤832 ≤207 ≤867 See also: 81KIM/KAT.	-36.7±0.1 -153.8±0.5 -28.4 -118.8	77PED/RYL	78-78-4
neo-C <sub>5</sub> H <sub>12</sub>	≤10.21±0.04  See also: 81KIM/K	≤195 ≤818 <i>≤203 ≤850</i> (AT.	-40.0±0.1 -167.4±0.7 -32.4 -135.6	77PED/RYL	463-82-1
C <sub>5</sub> H <sub>12</sub> Cl <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> CClCH <sub>3</sub>	From equilibrium	(137) (572) constant determination (8	BSSHA/HOJ).		
C <sub>5</sub> H <sub>12</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> CNHC <sub>2</sub> H <sub>5</sub>	From proton affin	(128) (534) ity of (CH <sub>3</sub> ) <sub>2</sub> C = NC <sub>2</sub> H <sub>5</sub>	(RN 15673-04-8). PA = (229	9.5) kcal/mol,	
CH <sub>3</sub> CH <sub>2</sub> CHN(CH <sub>3</sub> ) <sub>2</sub>	From proton affini 960. kJ/mol.	142 596 ity of CH <sub>3</sub> CH = CHN(CH	( <sub>3</sub> ) <sub>2</sub> (RN 6163-56-0). PA = 2	29.4 kcal/mol,	
( N )H+	From proton affini	128 535 ity of piperidine (RN 110-	89-4). PA = 226.4 kcal/mol, 9	947. kJ/mol.	
( \( \bigcup_{\text{N}} \) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	From proton affini 957. kJ/mol.	136 571 ty of N-methylpyrrolidine	(RN 120-94-5). PA = 228.7	kcal/mol,	

 $C_5H_{12}NO_2^+$   $(CH_3)_2NC(OH)OC_2H_5$ 

43 180

From proton affinity of  $(CH_3)_2NCOOC_2H_5$  (RN 687-48-9). PA = 213.7 kcal/mol, 894. kJ/mol.

Table 1. Positive Ion Table - Continued

	Table .	I. Posi	tive Ion Tab	le - Contin	ued		
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>5</sub> H <sub>12</sub> NO <sub>2</sub> + L-i-C <sub>3</sub> H <sub>7</sub> CH(NH <sub>3</sub> )COOH	I From proton affin	40	167	S)COOH (RN 1	72-18-4)		
	PA = 217.0  kcal/n			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2 10 1).		
C <sub>5</sub> H <sub>12</sub> NO <sub>2</sub> P <sup>+</sup>							
0 P N(CH <sub>3</sub> ) <sub>2</sub>	7.8 IP from 81ARS/Z	(50) VE.	(208)	-130	-545	•EST	17454-25-0
C <sub>5</sub> H <sub>12</sub> NO <sub>2</sub> S <sup>+</sup> L-CH <sub>3</sub> SCH <sub>2</sub> CH <sub>2</sub> CH(NH <sub>3</sub>	СООН						
3 2 2 \ 3		45	190				
	From proton affini PA = 221.4 kcal/m			CH(NH <sub>2</sub> )COO	H (RN 59-51-8)		
C <sub>5</sub> H <sub>12</sub> N <sub>2</sub> +							
CH <sub>3</sub>	6.66 IP from charge trait Reference standard					*EST	38704-89-1
C <sub>5</sub> H <sub>12</sub> N <sub>2</sub> O <sup>+</sup>		<del></del>					
((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> CO	≤8.64	(≤142)	(≤595)	-57	-238	*EST	632-22-4
C <sub>5</sub> H <sub>12</sub> N <sub>2</sub> S <sup>+</sup> ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> CS	(7.5) IP is onset of photo	(184) pelectron	(769) band. See also:	11±0.5 85ROT/BOC.	45±2	82INA/MUR2	2782-91-4
C <sub>5</sub> H <sub>12</sub> O +							
n-C <sub>5</sub> H <sub>11</sub> OH	10.00±0.03 IP from 77ASH/BU	160 JR. See a	668 lso: 80BAC/M0		-296.7±1.6	77PED/RYL	71-41-0
СН <sub>3</sub> СН <sub>2</sub> СН(СН <sub>3</sub> )СН <sub>2</sub> ОН		(155) N.	(649)	-72.2±0.3	-302.0±1.4	77PED/RYL	137-32-6
n-C <sub>3</sub> H <sub>7</sub> CH(OH)CH <sub>3</sub>	(9.78±0.03) IP from 77ASH/BU	(151) JR, 84BC	(630) W/MAC.	-75.0±0.2	-313.8±0.8	77PED/RYL	6032-29-7
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> СНОН	9.78 IP from 81HOL/FI	150 N, 84BO	628 W/MAC. See al	−75.4±0.2 Iso: 77ASH/BU		77PED/RYL	584-02-1
(CH <sub>3</sub> ) <sub>2</sub> CHCH(OH)CH <sub>3</sub>	(10.01) IP from 84BOW/M	(155) AC.	(650)	-75.4±0.3	-315.7±1.1	77PED/RYL	598-75-4

Table 1. Positive Ion Table - Continued

			ive ion Tabl	e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H kcal/m	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>5</sub> H <sub>12</sub> O <sup>+</sup> С <sub>2</sub> H <sub>5</sub> C(CH <sub>3</sub> ) <sub>2</sub> OH	9.80 IP from 84BOW/N	147 MAC, 82I	615 LEV/LIA.	-79.1±0.3	~330.8±1.3	77PED/RYL	75-85-4
n-C <sub>4</sub> H <sub>9</sub> OCH <sub>3</sub>	(9.54) IP from 81HOL/F	(158) IN.	(662)	-61.7±0.3	-258.1±1.1	77PED/RYL	628-28-4
n-C <sub>3</sub> H <sub>7</sub> OC <sub>2</sub> H <sub>5</sub>	(9.45±0.1) IP cited in 81HOL	(153) /FIN.	(640)	-65.0±0.2	-272.2±1	77PED/RYL	628-32-0
tert-C <sub>4</sub> H <sub>9</sub> OCH <sub>3</sub>	(9.24) IP from 84BOW/N	(145) AAC. See	(608) : also: 80BAC/N	-67.8±0.2 IOU.	~-283.6±1	77PED/RYL	1634-04-4
C <sub>5</sub> H <sub>12</sub> O <sub>2</sub> <sup>+</sup> n-C <sub>3</sub> H <sub>7</sub> CH(CH <sub>3</sub> )ООН	(9.35±0.03) IP from 77ASH/B	(159) UR.	(666)	-56	-236	*EST	14018-58-7
СН <sub>3</sub> О(СН <sub>2</sub> ) <sub>3</sub> ОСН <sub>3</sub>	(9.3) IP is onset of phot	(126) oelectron	(526) band (83BIE/N	-89 MOR).	<b>-</b> 371	•EST	17081-21-9
n-C <sub>5</sub> H <sub>11</sub> OOH	(9.50±0.03) IP from 77ASH/B	(167) UR.	(698)	-52	-219	*EST	74-80-6
C <sub>5</sub> H <sub>12</sub> O <sub>3</sub> + CH <sub>3</sub> C(OCH <sub>3</sub> ) <sub>3</sub>	(9.65) IP from 82HOL/L	(82) OS2.	(343)	-140±0.5	-588±2	77PED/RYL	1445-45-0
C <sub>5</sub> H <sub>12</sub> S <sup>+</sup>							
n-C <sub>3</sub> H <sub>7</sub> SC <sub>2</sub> H <sub>5</sub>	(8.50±0.05)	(171)	(715)	-25.0±0.2	-104.7±0.7	77PED/RYL	4110-50-3
(CH <sub>3</sub> ) <sub>3</sub> CSCH <sub>3</sub>	(8.38±0.05)	(164)	(687)	-29.0±0.2	-121.3±0.7	77PED/RYL	6163-64-0
C <sub>2</sub> H <sub>5</sub> S(iso-C <sub>3</sub> H <sub>7</sub> )	(8.35±0.01)	(165)	(689)	-28±0.6	−117±2	77PED/RYL	5145-99-3
C <sub>5</sub> H <sub>12</sub> S <sub>2</sub> + C <sub>2</sub> H <sub>5</sub> SCH <sub>2</sub> SC <sub>2</sub> H <sub>5</sub>	(8.22±0.02)	(179)	(750)	-10	-43	*EST	4396-19-4
$C_5H_{12}Si^+$ $CH_2 = CHSi(CH_3)_3$	(9.5) IP is onset of photo	(190) Delectron	(794) band (81KHV/	-29 ZYK, 82LEV/I	–123 JA).	*EST	754-05-2
S«CH3)2	8.83±0.07 See also: 82DYK/J	184 OS, 81K0	769 DE/MCK, 81GU	-19.8 JS/VOL2.	-82.8	81GUS/VOL2	2295-12-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>5</sub> H <sub>12</sub> Sn + CH <sub>2</sub> = CHSn(CH <sub>3</sub> ) <sub>3</sub>	(≤9.7)	(≤246)	(≤1028)	22±3	92±13	77PED/RYL	754-06-3
C <sub>5</sub> H <sub>13</sub> N <sup>+</sup> n-C <sub>5</sub> H <sub>11</sub> NH <sub>2</sub>	(8.67) IP from 79AUE/I	(174) 3OW.	(726)	-26	-110	*EST	110-58-7
tert-C <sub>5</sub> H <sub>11</sub> NH <sub>2</sub>	(8.46±0.1)	(165)	(689)	-30	-127	*EST	594-39-8
neo-C <sub>5</sub> H <sub>11</sub> NH <sub>2</sub>	(8.54±0.1)	(166)	(692)	-31	-132	•EST	5813-64-9
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (CH <sub>3</sub> )N	(7.50±0.1) IP from 79AUE/F	(156) BOW.	(654)	-17	<b>-7</b> 0	*EST	616-39-7
(CH <sub>3</sub> ) <sub>2</sub> (i-C <sub>3</sub> H <sub>7</sub> )N	(7.3) $\Delta_f H( ext{Ion})$ from hy series. IP cited is	_		-	-76 L.	*EST	996-35-0
С <sub>5</sub> H <sub>13</sub> N <sub>2</sub> O <sup>+</sup> [(СН <sub>3</sub> ) <sub>2</sub> N] <sub>2</sub> СОН	From proton affin PA = 221.1 kcal/n			(RN 632-22-4) (1	86TAF/GAL	).	
C <sub>5</sub> H <sub>13</sub> O +							
nco-C <sub>5</sub> H <sub>11</sub> OH <sub>2</sub>	From proton affin PA = 193.6 kcal/n			N 75-84-3) (78T <i>i</i>	AF/TAA).		
C <sub>2</sub> H <sub>5</sub> OH(i-C <sub>3</sub> H <sub>7</sub> )	From proton affini 851. kJ/mol.	94 ity of C <sub>2</sub> H <sub>5</sub> (	393 O(i-C <sub>3</sub> H <sub>7</sub> ) (i	RN 625-54-7). P.	A = 203.5 kc	al/mol,	
t-C <sub>4</sub> H <sub>9</sub> OHCH <sub>3</sub>	From proton affini 846. kJ/mol.	96 ty of t-C <sub>4</sub> H <sub>9</sub>	400 <sub>9</sub> OCH <sub>3</sub> (RN	1634-04-4). PA	= 202.2 kcal	/mol,	
C <sub>5</sub> H <sub>14</sub> N <sup>+</sup>							·
n-C <sub>5</sub> H <sub>11</sub> NH <sub>3</sub>	From proton affini 916. kJ/mol.		504 <sub>11</sub> NH <sub>2</sub> (RN	110-58-7). PA =	= 218.9 kcal/r	nol,	
tert-C <sub>5</sub> H <sub>11</sub> NH <sub>3</sub>	From proton affini 930. kJ/mol.		468 H <sub>11</sub> NH <sub>2</sub> (R	N 594-39-8). PA	. = 222.3 kca	l/mol,	
neo-C <sub>5</sub> H <sub>11</sub> NH <sub>3</sub>	From proton affinit 917.5 kJ/mol.		481 H <sub>11</sub> NH <sub>2</sub> (R	N 5813-64-9). PA	A = 219.3 kc	al/mol,	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{f}})$	on)	$\Delta_{\mathbf{f}}H(N)$	eutral)	Neutral	CAS registry
Neutral	eV	-	kJ/mol	-	kJ/mol	reference	number
C <sub>5</sub> H <sub>14</sub> N <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> )(i-C <sub>3</sub> H <sub>7</sub> )NH <sub>2</sub>							
	From proton affir 951. kJ/mol.	113 nity of (C <sub>2</sub> H	474 I <sub>5</sub> )(i-C <sub>3</sub> H <sub>7</sub> )N	H (RN 19961-2	27-4). PA = 2	27.4 kcal/mol,	
(CH <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NH	From proton affin 962. kJ/mol.	119 nity of (CH <sub>3</sub>	498 <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> N (	RN 616-39 <b>-</b> 7).	PA = 230.0 k	cal/mol,	
(CH <sub>3</sub> ) <sub>2</sub> (i-C <sub>3</sub> H <sub>7</sub> )NH							
	From proton affin	118 hity of (CH <sub>3</sub>	493 <sub>3</sub> ) <sub>2</sub> (i-C <sub>3</sub> H <sub>7</sub> )N	(RN 996-35-0)	. PA = 229.8	kcal/mol,	
C <sub>5</sub> H <sub>14</sub> N <sub>2</sub> + (C <sub>2</sub> H <sub>5</sub> )(CH <sub>3</sub> )NN(CH <sub>3</sub> ) <sub>2</sub>			***************************************				
	(8.18) Reported values of are usually signification large geometry characters.	antly highe	r than the adia	abatic value be	cause of the	*EST ments	50599-41-2
((CH <sub>3</sub> ) <sub>2</sub> N) <sub>2</sub> CH <sub>2</sub>	(7.74±0.05) See also: 81LOG/	(174) TAK.	(729)	-4.2±0.3	-17.6±1.4	77PED/RYL	51-80-9
C <sub>5</sub> H <sub>14</sub> N <sub>2</sub> OP +				···			
(CH3-N N-CH3 ) H	+ From proton affin (RN 16606-18-1) (	42 ity of 2,5-di 84MAU/NI	176 methyl-1,3,2-d EL). PA = 22	iazaphospholi 24.8 kcal/mol, 9	dine-2-oxide 941. kJ/mol.		
C <sub>5</sub> H <sub>14</sub> N <sub>3</sub> <sup>+</sup> [(CH <sub>3</sub> ) <sub>2</sub> N] <sub>2</sub> CNH <sub>2</sub>	From proton affin PA = 241.0 kcal/n			(RN 31081-16	5-0) (86TAF/C	GAL).	
C <sub>5</sub> H <sub>14</sub> Si <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiC <sub>2</sub> H <sub>5</sub>	(9.6)	(164)	(685)	<b>~5</b> 8	-241	*EST	3439-38-1
C <sub>5</sub> H <sub>14</sub> Sn <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SnC <sub>2</sub> H <sub>5</sub>	(8.6) IP is onset of phot	(191) oelectron b	(800) and.	~7±0.7	-30±3	77PED/RYL	3531-44-0
C <sub>5</sub> H <sub>15</sub> N <sub>2</sub> + NH <sub>2</sub> (CH <sub>2</sub> ) <sub>5</sub> NH <sub>3</sub>	From proton affin	110 ity of NH <sub>2</sub> (	461 CH <sub>2</sub> ) <sub>5</sub> NH <sub>2</sub> (I	RN 462-94-2).	PA = 238.1 kg	cal/mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol			eutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>5</sub> H <sub>15</sub> N <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NH(CH <sub>2</sub> ) <sub>3</sub> NH <sub>2</sub>	From proton aff PA = 241. kcal/i			H <sub>2</sub> (RN 109-5	5-7). Data re-	evaluated.	
C <sub>5</sub> H <sub>15</sub> Si <sub>2</sub> + (CH <sub>3</sub> ) <sub>3</sub> SiSi(CH <sub>3</sub> ) <sub>2</sub>	Δ <sub>f</sub> H(Ion) from a	117 ppearance p	489 Otential detern	nination (84S	ZE/BAE, 84S2	ZE/BAE2). 0 K valu	ies.
C <sub>5</sub> H <sub>15</sub> Ta + Ta(CH <sub>3</sub> ) <sub>5</sub>	8.25 IP is onset of pho	241 otoelectron b	1007 and (75GAL/	51±6 WIL, 82LEV/	212±26 LIA).	82PIL/SKI	53378-72-6
C <sub>5</sub> H <sub>16</sub> NSi <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiNH(CH <sub>3</sub> ) <sub>2</sub>	From proton affi (946) kJ/mol.	(81) nity of (CH <sub>3</sub> )	(336) ) <sub>3</sub> SiN(CH <sub>3</sub> ) <sub>2</sub>	(RN 18135-05	-2). PA = (22	6) kcal/mol,	
C <sub>5</sub> IMnO <sub>5</sub> + Mn(CO) <sub>5</sub> I	(8.1) IP is onset of pho		(-52) and.	−199±1	-834±5	82CON/ZAF	14879-42-6
C <sub>5</sub> N <sub>2</sub> OS <sub>2</sub> <sup>+</sup>							
NC S O	≤9.94 IP from 83SCH/S		(≤1229)	65	270	*EST	934-31-6
C <sub>5</sub> N <sub>4</sub> + C(CN) <sub>4</sub>	(13.94)	(482)	(2018)	161±2	673±9	82CHU/NGU	24331-09-7
C <sub>6</sub> BrF <sub>5</sub> <sup>+</sup> F F F F F F	9.57±0.02	51	211	-170±4	-712±17	77KRE/PRI	344-04-7
C <sub>6</sub> CIF <sub>5</sub> +  F F F F	(9.72±0.02)	(30)	(128)	-194±3	-810±11	77PED/RYL	344-07-0

Table 1. Positive Ion Table - Continued

	Table	1. 1 03111	ve ion table	e - Contin	iucu		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/moi	Neutral reference	CAS registry number
C <sub>6</sub> Cl <sub>4</sub> O <sub>2</sub> +  C <sub>1</sub> C <sub>1</sub> C <sub>1</sub> C <sub>1</sub> C <sub>1</sub> C <sub>1</sub>	9.74 IP from 81SAT/S	180 SEK.	754	~44.4±2.8	~185.7±11	77PED/RYL	118-75-2
	8.98 IP from 81SAT/S	196.4 SEK. See als	821.7 o: 81RUS/KL	-10.7 A, 81KIM/KAT	-44.7 F.	83PLA/SIM	118-74-1
C <sub>6</sub> CrO <sub>6</sub> + Cr(CO) <sub>6</sub>	8.142±0.017 See also: 82HUB	–29 /LIC, 85DA	-122 .S/NIS.	-217.0±0.	3 -908±1.2	77PED/RYL	13007-92-6
C <sub>6</sub> F <sub>3</sub> MnO <sub>5</sub> + CF <sub>3</sub> Mn(CO) <sub>5</sub>	8.8 IP is onset of pho	-128	-537 pand.	-331±1	-1386±4	82CON/ZAF	13601-14-4
C <sub>6</sub> F <sub>4</sub> O <sub>2</sub> +	(10.7) IP is onset of pho	(52) otoelectron (	(216) pand.	~195.0±9.	9 -816±41	*EST	527-21-9
C <sub>6</sub> F <sub>5</sub> I <sup>+</sup> F F F F	9.54 See also: 81BIE/4	87 ASB.	362	−133±3	-558±13	77PED/RYL	827-15-6
C6F6+ CF3C*CC*CCF3	(10.99±0.01)	(78)	(326)	-175	-734	77PRA/HUB	10524-09-1
FFF	9.906 IP from 81BIE/A at 300 K based or (reference standa	determinat	ions of charge	transfer equili	brium constan		392-56-3
FFF	10.08±0.05	62	260	-170	-713	77PRA/HUB	6733-01-3

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Tab	le - Continued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
$C_6F_{12}^+$ $F_2$ $F_2$ $F_2$ $F_2$ $F_2$	(13.2)	(-262) (-1095)	-566±2 -2369±8	79PRI/SAP	355-68-0
C <sub>6</sub> HCl <sub>5</sub> <sup>+</sup> C <sub>1</sub> C <sub>1</sub> C <sub>1</sub>	(8.9) IP is onset of pho	(195.7) (818.7) toelectron band (81RUS	-9.6±2.1 -40.0±8.7 //KLA3).	85PLA/SIM2	608-93-5
C <sub>6</sub> HCrO <sub>6</sub> + HCr(CO) <sub>6</sub>	From proton affir	(-31) (-131) nity of Cr(CO) <sub>6</sub> (RN 130	07-92-6). PA = (180) kcal/mol	(753) kJ/mol.	
C <sub>6</sub> HF <sub>5</sub> <sup>+</sup>					
F F	(standard: C <sub>6</sub> H <sub>5</sub> C		-193±2 -806±7 equilibrium constant determinat US). Value of 9.64 eV reported . See also: 81BIE/ASB.		363-72-4
C <sub>6</sub> HF <sub>5</sub> O <sup>+</sup> F  OH  F  F  F	9.20±0.02	-17 -69	-229±0.5 -957±2	77PED/RYL	771-61-9
C <sub>6</sub> HF <sub>6</sub> <sup>+</sup> F F F F F F	From proton affin 743. kJ/mol.	–38 –159 ity of C <sub>6</sub> F <sub>6</sub> (RN 392-56-	3). PA = 177.7 kcal/mol,		
C <sub>6</sub> HM <sub>0</sub> O <sub>6</sub> + HM <sub>0</sub> (CO) <sub>6</sub>	From proton affin	-38 -160 ity of Mo(CO) <sub>6</sub> (RN 139	739-06-5). PA = (185) kcal/mol	, (774) kJ/mol.	
C <sub>6</sub> HO <sub>6</sub> V <sup>+</sup> HV(CO) <sub>6</sub>	From proton affin	(–33) (–138) ity of V(CO) <sub>6</sub> (RN 2064	4-87-5). PA = (194.5) kcal/mol	, (814) kJ/mol.	
C <sub>6</sub> HO <sub>6</sub> W <sup>+</sup> HW(CO) <sub>6</sub>	From proton affin	–30 –127 ity of W(CO) <sub>6</sub> (RN 1404	0-11-0). PA = (184) kcal/mol,	(770) kJ/mol.	

Table 1. Positive Ion Table - Continued

	Table	1. 1 03111	ve luit lan	e - Conti	<u></u>		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	•	leutral) I kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>2</sub> + HC=CC≡CC≡CH	(9.50)	(375)	(1569)	155	652	*EST	3161-99-7
C <sub>6</sub> H <sub>2</sub> Cl <sub>4</sub> + Cl Cl Cl	(8.9) IP is onset of pho	(199.1) toelectron l	(833.3) band (81RUS	-6.1 /KLA3).	-25.4	85PLA/SIM	634-66-2
CICI	(9.0) IP is onset of pho	(199) toelectron l	(833) pand (81RUS)	-8.3 /KLA3).	-34.9	85PLA/SIM	634-90-2
CI	8.9 IP is onset of phot	197.4 toelectron t	826.1 pand (81RUS)	-7.8 KLA3, 81KIM	–32.6 L/KAT).	83PLA/SIM	95-94-3
C <sub>6</sub> H <sub>2</sub> Cl <sub>4</sub> O <sub>2</sub> + Cl OH	(8.30±0.05)	(104)	(437)	-87	-364	77PED/RYL	87-87-6
C <sub>6</sub> H <sub>2</sub> F <sub>4</sub> <sup>+</sup>	9.53±0.01 Ionization potenti (standard: IP of C photoelectron spe	6H5CF3, 9.	.685 eV)(78LI	A/AUS). Valu	stant determin se of ionization		551-62-2
FF	9.53±0.01 Ionization potential (standard: ionization potential spectroscopy, 9.56	ion potentia al from pho	al of C <sub>6</sub> H <sub>5</sub> CF toionization,	quilibrium con <sub>3</sub> , 9.685 eV)(78 9.55 eV; from <sub>1</sub>	BLIA/AUS). V		2367-82-0
F CF	9.35±0.01 Ionization potentia (standard: ionization photoelectro	on potentia	of C <sub>6</sub> H <sub>5</sub> CF	3, 9.685 eV)(78	BLIA/AUS). V		327-54-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(l kcal/mol	on) kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>2</sub> F <sub>5</sub> +	From proton affin 753. kJ/mol.	-7 ity of C <sub>6</sub> H	29 F <sub>5</sub> (RN 363-72-4)	. PA = 17	79.9 kcal/mol,		
C <sub>6</sub> H <sub>2</sub> N <sub>2</sub> S+	≤9.76 IP from 83BOC/R	(≤319) .OT.	(≤1337)	94	395	•EST	18853-40-2
NC CN	(≤10.20) IP from 83BOC/R	(≤331) .OT.	(≤1384)	96	400	*EST	18853-32-2
C <sub>6</sub> H <sub>3</sub> Cl <sub>2</sub> NOS + .	(≤9.46) IP from 82LOU/V	(≤197) 'AN.	(≤826)	-21	-87	*EST	
C <sub>6</sub> H <sub>3</sub> Cl <sub>3</sub> +	9.18 IP from 81RUS/K	209.8 LA3.	877.6	-1.9	-8.1	85PLA/SIM	87-61-6
CI	9.04 IP from 81RUS/KI	210 LA3	880	1.9	8.1	85PLA/SIM	120-82-1
CI CI .	9.32±0.02 IP from 81RUS/KI	215 LA(3), ons	899 et of photoelectro	0 on band (81	0 IKIM/KAT). See	82SHA e also: 82MAI/THO	108-70-3 D2.

Table 1. Positive Ion Table - Continued

	Table :	l. Positi	ve Ion Tabl	e - Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>6</sub> H <sub>3</sub> F <sub>3</sub> +	(9.7) IP from 81BIE/AS	(107) SB.	(448)	-117	-488	*EST	1489-53-8
F	9.30±0.05 IP from charge tra C <sub>6</sub> H <sub>5</sub> CF <sub>3</sub> , 9.685 e (81BIE/ASB, 77R	V)(78LIA/	AUS) and fro				367-23-7
F F	9.64 See also: 81BIE/A	(100) SB.	(418)	-122±0.7	-512±3	*EST	372-38-3
C <sub>6</sub> H <sub>3</sub> F <sub>4</sub> +	From proton affin 758. kJ/mol.	32 ity of 1,2,3,	134 4-C <sub>6</sub> F <sub>4</sub> H <sub>2</sub> (Ri	N 551-62-2). P <i>P</i>	A = 181.1 kca	al/mol,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
F F F	From proton affin 756. kJ/mol.	28 ity of 1,2,3,	117 5-C <sub>6</sub> F <sub>4</sub> H <sub>2</sub> (R)	N 2367-82-0). P	'A = 180.6 kg	cal/mol,	
F H <sub>2</sub> F	From proton affin 752. kJ/mol.	31 ity of 1,2,4,	131 5-C <sub>6</sub> F <sub>4</sub> H <sub>2</sub> (RI	N 327-54-8).  PA	A = 179.7 kca	al/mol,	
C <sub>6</sub> H <sub>3</sub> MnO <sub>5</sub> + CH <sub>3</sub> (CO) <sub>5</sub> Mn	(8.4) IP is onset of phot	(14) oelectron t	(57) pand.	-180±1	−753±4	82CON/ZAF	13601-24-6
C <sub>6</sub> H <sub>3</sub> N <sub>3</sub> O <sub>6</sub> + NO <sub>2</sub> NO <sub>2</sub>	(10.96±0.02)	(268)	(1119)	15±0.5	62±2	77PED/RYL	99-35-4

Table 1. Positive Ion Table - Continued

ION	Ionization potential	A 7777		A 77/2			
· Neutral	eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(No kcal/mol	kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>3</sub> O <sub>5</sub> Re <sup>+</sup>			<del></del>				
(CO) <sub>5</sub> CH <sub>3</sub> Re	8.5	14	60	-182±1	-760±6	82PIL/SKI	14524-92-6
	IP is onset of pho	toelectron b	and.				•
C <sub>6</sub> H <sub>4</sub> +					·		
(Z)-HC≡CCH = CHC≡CH							
	(9.10±0.02)	(333)	(1394)	123	516	*EST	16668-67-0
(E)-HC≡CCH = CHC≡CH							
	(9.07±0.02)	(334)	(1400)	125	525	*EST	16668-68-1
	8.6	313	1311	115	481	80POL/HEH	462-80-6
		316	1321	118	492		
	$\Delta_f H$ (Ion) from 80	ROS/STO2	. Cited IP =	$\Delta_{\mathbf{f}}\Delta$ - (noI) $H_{\mathbf{f}}\Delta$	I(Neutral);	S/DAN, 85DEW/TIE	-
	a value of 8.33 e v	nas occii es	mateu (ou	(CS/S1U2). Se	e also: 82RU	S/DAN, 85DEW/III	<b>5.</b>
C.W.P.+							
C <sub>6</sub> H <sub>4</sub> Br <sup>+</sup>							
Br	9.04	298	1247	89.6	374.9	77NUY/MES	2973-43-5
.0	$\Delta_{f}H(Ion)$ from 77	NUY/MES.	IP is $\Delta_{\mathbf{f}}H(\mathbf{I})$	on)-∆ <sub>f</sub> H(Neutra	1).		
o v p voct		<del></del>					
C <sub>6</sub> H <sub>4</sub> BrNOS <sup>+</sup> <sub>N</sub> ≤S≈0							
N	(≤8.91)	(≤203)	(≤851)	-2	-9	*EST	26516-62-1
	IP from 82LOU/V						
Br							
C <sub>6</sub> H <sub>4</sub> BrN <sub>2</sub> +							
Br	(8.18)	(276)	(1155)	87	366	*EST	
.N=N	$\Delta_{\rm f}H({ m Ion})$ from 77N					201	
							····
C <sub>6</sub> H <sub>4</sub> Br <sub>2</sub> +							
Br	8.8	(234)	(981)	21 5	123	*FOT	500 50 0
Br	IP is onset of photo			31.5	132	*EST	583-53-9
$\bigvee$	•						
•							
₽r							
			985	31	131	83DEW/HEA	108-36-1
₩ <sub>Br</sub>	IP is onset of photoe	electron bar	nd.				

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Tab	le - Contir	nued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(N- kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>4</sub> Br <sub>2</sub> +				· · · · · · · · · · · · · · · · · · ·			
Br Br	8.7 IP is onset of pho	(232) toelectron t	(970) pand.	31	131	*est	106-37-6
C <sub>6</sub> H <sub>4</sub> CIF <sup>+</sup>			-1				
g d a	9.18±0.01 See also: 78LIA/A	(181) AUS.	(756)	-31	-130	*EST	348-51-6
F <sub>CI</sub>	9.21±0.01	(179)	(749)	-33	-140	*EST	625-98-9
CI F	9.01±0.01 IP from 78LIA/A	(174) US.	(728)	<del></del> 34	-141	•est	352-33-0
C <sub>6</sub> H <sub>4</sub> CINOS +	(8.8) IP is onset of phot	(188) coelectron b	(787) and (82LOL	(-15) J/VAN).	(-62)	?	
C <sub>6</sub> H <sub>4</sub> CINO <sub>2</sub> +	(9.92±0.1)	(238)	(995)	9.1±2.0	38.1±8.4	*EST	121-73-3
NO <sub>2</sub>	9.96±0.1	(239)	(999)	9.1±2.0	38.1±8.4	*EST	100-00-5
	· · · · · · · · · · · · · · · · · · ·						

Table 1. Positive Ion Table - Continued

	Table	I. Positi	ve ion Tabl	e - Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/moi	Δ <sub>f</sub> H(No kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub> +	9.08±0.01 IP from charge tra See also: 81RUS/I	_		7.9 nt determinatio	33.0 on (78LIA/AU:	84PLA/SIM S).	95-50-1
Ç,	9.11±0.01 IP from charge tra 82LEV/LIA, 81RU			6.7 nt determinatio	28.1 on(78LIA/AUS	84PLA/SIM ). See also:	541-73-1
cr Ca	8.89±0.01 IP from 81RUS/KI transfer equilibriu					84PLA/SIM charge	106-46-7
CI CI	(8.65±0.02)	(174)	(729)	-25	-106	82SHA	87-65-0
6H <sub>4</sub> FNO <sub>2</sub> + NO <sub>2</sub> F	(≤9.86)	(≤199)	(≤833)	-28	-118	*EST	1493-27-2
NO <sub>2</sub>	9.88	(198)	(827)	-30	-126	*EST	402-67-5
F NO <sub>2</sub>	9.90	(197)	(824)	-31	-131	•EST	350-46-9
6H4F2+	(9.28±0.01) Ionization potentia (standard: ionizatio potential from Ryd (81BIE/ASB) = 9.	on potential berg series	of C <sub>6</sub> H <sub>5</sub> CF <sub>3</sub>	uilibrium const , 9.685 eV). Val	ue of ionization		367-11-3

Table 1. Positive Ion Table - Continued

	Table 1	I. Positi	ve Ion Tabl	e - Conti	nued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mol	on) kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry
C <sub>6</sub> H <sub>4</sub> F <sub>2</sub> +	9.33±0.01 Ionization potenti (standard: ionizati potential from Ryo See also: 81BIE/A	on potenti dberg serie	al of C6H5CF	quilibrium cor 3, 9.685 eV). V	/alue of ionizati	ion	372-18-9
F	9.14±0.01 Ionization potentia (standard: ionizati potential from Ryo spectroscopy, 9.14	on potenti Iberg serie	al of C <sub>6</sub> H <sub>5</sub> CF s, 9.18 eV, fro	quilibrium cor 3, 9.685 eV). V	alue of ionizati	on	540-36-3
C <sub>6</sub> H <sub>4</sub> F <sub>3</sub> +							
F H <sub>2</sub>	From proton affini 757. kJ/mol.	62 ity of 1,3,5	261 ·C <sub>6</sub> F <sub>3</sub> H <sub>3</sub> (RN	372-38-3). PA	⊾ = 181. kcal/m	ol,	
F H	From proton affini 759. kJ/mol.	69 ty of 1,2,4-	289 C <sub>6</sub> F <sub>3</sub> H <sub>3</sub> (RN	367-23-7). PA	√ = 181.4 kcal/n	nol,	
C <sub>6</sub> H <sub>4</sub> F <sub>3</sub> N <sup>+</sup>			77.11	·			
© CF3	(≤10.1)	(≤105)	(≤438)	-128	-536	*EST	3796-24-5
C <sub>6</sub> H <sub>4</sub> F <sub>3</sub> NO <sup>+</sup>	(≤8.90)	(≤58)	(≤243)	-147	-616	*EST	
C <sub>6</sub> H <sub>4</sub> FeO <sub>4</sub> +  CO  H <sub>2</sub> C  Fe  CO  CO	(7.6) IP is onset of photo	(46) electron b	(192) and.	-129±2	-541±10	82PIL/SKI	32799-25-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV		on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>4</sub> I <sub>2</sub> +	8.45 IP is onset of ph	(252) otoelectron	(1056) band.	58	241	*EST	624-38-4
C <sub>6</sub> H <sub>4</sub> MnO <sub>5</sub> + CH <sub>3</sub> MnH(CO) <sub>5</sub>	From proton affi	3 inity of CH <sub>3</sub>	11 Mn(CO) <sub>5</sub> (RI	N 13601-24-6).	PA = 183 kca	I/mol, 766 kJ/mol.	
C <sub>6</sub> H <sub>4</sub> NO <sub>2</sub> +	(9.06) IP from 77NUY/	(283) MES.	(1183)	74	309	*EST	2395-99-5
C <sub>6</sub> H <sub>4</sub> N <sub>2</sub> +	10.12	301	1260	67±0.5	281±2	84BIC/PIL	100-70-9
O_CN	(10.0) IP is onset of pho	(297) otoelectron b	(1243) aand.	66±0.5	278±2	84BIC/PIL	100-54-9
NC ON	(9.9) IP is onset of pho	(296) stoclectron b	(1239) and.	68±0.2	284±1	84BIC/PIL	100-48-1
C <sub>6</sub> H <sub>4</sub> N <sub>2</sub> O +	(8.96±0.02)	(256)	(1069)	49	204	*EST	2402-98-4
ON CN	(≤8.93±0.02)	(≤254)	(≤1064)	48	202	*EST	14906-64-0

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>4</sub> N <sub>2</sub> O +	8.95±0.02	(255)	(1068)	49	204	*EST	14906-59-3				
	(9.37)	(288)	(1205)	72±0.5	301±2	80ARS	273-09-6				
C <sub>6</sub> H <sub>4</sub> N <sub>2</sub> O <sub>4</sub> +	(≤10.71)	(≤267)	(≤1119)	21±0.5	86±2	76FER/PIA	528-29-0				
NO <sub>2</sub>	10.43±0.02	255	1065	14±0.2	59±1	76FER/PIA	99-65-0				
O <sub>Z</sub> N NO <sub>2</sub>	10.3±0.1	251	1051	14±0.7	57±3	76FER/PIA	100-25-4				
C <sub>6</sub> H <sub>4</sub> N <sub>2</sub> Se <sup>+</sup>	(8.5) IP is onset of phot	(292) oelectron b	(1223) and.	96	403	*EST	273-92-7				
C <sub>6</sub> H <sub>4</sub> N <sub>3</sub> O <sub>2</sub> + N=N·	(7.89) IP from 77NUY/M	(258) IES.	(1079)	76	318	*EST					
				****							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>4</sub> N <sub>4</sub> <sup>+</sup>	(8.9) IP is onset of pho	(295) coelectron b	(1233) and (84GLE/SP	89 A2).	374	*EST	255-53-8
C <sub>6</sub> H <sub>4</sub> O <sup>+</sup>							
C=0	8.2 IP is onset of pho	(214) coelectron ba	(895) and (79SCH/SC	25±1 H, 81BOC/F	104±6 HIR).	*EST	4727-22-4
C <sub>6</sub> H <sub>4</sub> O <sub>2</sub> +	10.04±0.18 See also: 83BOC/I	202 MOH.	846	-29±1	−123±4	77PED/RYL	106-51-4
CC°	(9.3) IP is onset of phot		(791) and.	-25±1	−106±4	*EST	583-63-1
C <sub>6</sub> H <sub>4</sub> O <sub>3</sub> +	(9.0) IP is onset of phot		(498) and (81BEC/HO	-88 F).	-370	*EST	81640-31-5
С <sub>6</sub> H <sub>5</sub> +		AL/ARA, 7 4PAN/BAE	/6BAE/TSA, 841 I, 85PAN/BAE, 8	LIF/MAL, 8 85PAN/BAI	0ROS/STO, 8 32, 86NIS/DA	1PRA/CHU, 84GEF S and 84BUR/HOL.	VLIF,
C <sub>6</sub> H <sub>5</sub> BCl <sub>2</sub> <sup>+</sup>	(9.3) IP is onset of photo		(631) nd.	-64±0.5	−266±2	77PED/RYL	873-51-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
Ionization potential eV			-		Neutral reference	CAS registry				
8.98±0.02	232 <i>237</i>	971 993	24.9±0.7 30.1±0.7	104.3±3.1 126.1±3.1	77PED/RYL	108-86-1				
				n band in 81KIM/	KAT.					
				•		·····				
(9.1) IP is onset of phot	(248) coelectron b	(1037) and (81BAI/CHI	38 I).	159	*EST	1192-89-8				
<u> </u>										
9.06±0.02 See also: 78LIA/A	222 .US, 81RUS	929 S/KLA2, 82VON/	13.0±0.2 /ASB, 83KL	54.4±0.9 .A/KOV, 81KIM	85PLA/SIM /KAT, 86FUJ/OH	108-90-7 IN.				
	<u> </u>									
9.14±0.04 See also: 81BAI/C	240.5 HI.	1006.2	29.7	124.3	85DEW/GRA	100-56-1				
(8.65) IP from 85OIK/AI	(163) BE.	(682)	−37±2	-153±9	77PED/RYL	108-43-0				
(≤8.69)	(≤165)	(692)	−35±2	<b>−146±9</b>	77PED/RYL	106-48-9				
(8.9) IP is onset of photo	(194) oelectron b	(813) and (81BOC/HII	-11 R).	<b>-46</b>	*EST	78957-21-8				
	eV  8.98±0.02  IP from 78LIA/Al See also: 82VON/  (9.1)  IP is onset of phot  9.06±0.02 See also: 78LIA/A  9.14±0.04 See also: 81BAI/C  (8.65) IP from 85OIK/Al  (≤8.69)	eV kcal/mol  8.98±0.02 232 237 IP from 78LIA/AUS, 82LEV See also: 82VON/ASB, 83KL  (9.1) (248) IP is onset of photoelectron be seen also: 78LIA/AUS, 81RUS  9.06±0.02 222 See also: 78LIA/AUS, 81RUS  9.14±0.04 240.5 See also: 81BAI/CHI.  (8.65) (163) IP from 85OIK/ABE.	8.98±0.02 232 971 237 993 IP from 78LIA/AUS, 82LEV/LIA, onset of ph See also: 82VON/ASB, 83KLA/KOV, 86FUJ/  (9.1) (248) (1037) IP is onset of photoelectron band (81BAI/CHI  9.06±0.02 222 929 See also: 78LIA/AUS, 81RUS/KLA2, 82VON,  9.14±0.04 240.5 1006.2 See also: 81BAI/CHI.  (8.65) (163) (682) IP from 85OIK/ABE.  (≤8.69) (≤165) (692)	8.98±0.02 232 971 24.9±0.7 237 993 30.1±0.7 IP from 78LIA/AUS, 82LEV/LIA, onset of photoelectror See also: 82VON/ASB, 83KLA/KOV, 86FUJ/OHN.  (9.1) (248) (1037) 38 IP is onset of photoelectron band (81BAI/CHI).  9.06±0.02 222 929 13.0±0.2 See also: 78LIA/AUS, 81RUS/KLA2, 82VON/ASB, 83KI  9.14±0.04 240.5 1006.2 29.7 See also: 81BAI/CHI.  (8.65) (163) (682) -37±2 IP from 85OIK/ABE.	8.98±0.02 232 971 24.9±0.7 104.3±3.1 237 993 30.1±0.7 126.1±3.1 IP from 78LIA/AUS, 82LEV/LIA, onset of photoelectron band in 81KIM/ See also: 82VON/ASB, 83KLA/KOV, 86FUJ/OHN.  (9.1) (248) (1037) 38 159 IP is onset of photoelectron band (81BAI/CHI).  9.06±0.02 222 929 13.0±0.2 54.4±0.9 See also: 78LIA/AUS, 81RUS/KLA2, 82VON/ASB, 83KLA/KOV, 81KIM, 9.14±0.04 240.5 1006.2 29.7 124.3 See also: 81BAI/CHI.  (8.65) (163) (682) -37±2 -153±9 IP from 85OIK/ABE.  (\$8.69) (\$165) (692) -35±2 -146±9	eV kcal/mol kJ/mol kcal/mol kJ/mol reference  8.98±0.02 232 971 24.9±0.7 104.3±3.1 77PED/RYL 237 993 30.1±0.7 126.1±3.1  IP from 78LIA/AUS, 82LEV/LIA, onset of photoelectron band in 81KIM/KAT. See also: 82VON/ASB, 83KLA/KOV, 86FUJ/OHN.  (9.1) (248) (1037) 38 159 *EST  IP is onset of photoelectron band (81BAI/CHI).  9.06±0.02 222 929 13.0±0.2 54.4±0.9 85PLA/SIM See also: 78LIA/AUS, 81RUS/KLA2, 82VON/ASB, 83KLA/KOV, 81KIM/KAT, 86FUJ/OF  9.14±0.04 240.5 1006.2 29.7 124.3 85DEW/GRA See also: 81BAI/CHI.  (8.65) (163) (682) -37±2 -153±9 77PED/RYL  IP from 85OIK/ABE.  (\$8.69) (\$165) (692) -35±2 -146±9 77PED/RYL  (\$8.69) (\$165) (692) -35±2 -146±9 77PED/RYL				

Table 1. Positive Ion Table - Contin	111e	in	ιi	t	n	r	C	C	_	•	le	ah	$\mathbf{T}$	n	I	e.	iv	sit	05	P	1.	ıle	яh	Т
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ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>6</sub> H <sub>5</sub> Cl <sub>2</sub> N <sup>+</sup> NH <sub>2</sub> C <sub>1</sub> C <sub>1</sub> C <sub>1</sub>	(7.60±0.02)	(182)	(763)	7	30	*EST	608-31-1
C <sub>6</sub> H <sub>5</sub> Cl <sub>3</sub> Si <sup>+</sup>	(9.10) IP from 84VES/H	(115) AR.	(481)	-95	-397	*EST	98-13-5
C <sub>6</sub> H <sub>5</sub> F <sup>+</sup>	9.200±0.005 See also: 81BIE/A	184.4 SB, 81KIM	771.6 I/KAT, 86FUJ		−116.0±1.4	77PED/RYL	462-06-6
C <sub>6</sub> H <sub>5</sub> FO <sup>+</sup>	8.68±0.02 IP from 85OIK/A)	(131) BE.	(548)	-69	-289	*EST	367-12-4
OH F	8.73±0.02 IP from 85OIK/AI	(131) B <b>E</b> .	(547)	-71	-295	*EST	372-20-3
<sub>Б</sub> ОН	(8.5) IP is onset of phot	(126) oelectron b	(529) pand.	-70	-291	•EST	371-41-5



114 475

From proton affinity of 1,2-difluorobenzene (RN 367-11-3). PA = 181.8 kcal/mol, 761. kJ/mol.



110 460

From proton affinity of 1,3-difluorobenzene (RN 372-18-9) (82MAS/BOH). PA = 181.9 kcal/mol, 761. kJ/mol.

Table 1. Positive Ion Table - Continued

	Table	1. Positive ion Table	e - Continuea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>5</sub> F <sub>2</sub> <sup>+</sup>	From proton affin 758. kJ/mol.	111 465 ity of 1,4-difluorobenzend	e (RN 540-36-3). PA = 181.2	2 kcal/mol,	
C <sub>6</sub> H <sub>5</sub> F <sub>3</sub> N <sup>+</sup>					
CF <sub>3</sub>	From proton affin PA = 211.5 kcal/r	27 113 ity of 2-trifluoromethylpy nol, 885. kJ/mol.	rridine (RN 368-48-9).		
CF <sub>3</sub>	From proton affin PA = 212.6 kcal/n	25 104 ity of 3-trifluoromethylpy nol, 889. kJ/mol.	ridine (RN 3796-23-4).		
HN CF3	From proton affin PA = 212.8 kcal/n	25 104 ity of 4-trifluoromethylpy nol, 890. kJ/mol.	ridine (RN 3796-24-5).		
C <sub>6</sub> H <sub>5</sub> F <sub>3</sub> Si <sup>+</sup>					
S,F <sub>3</sub>	(9.18) IP from 84VES/H.	(-50) (-207) AR.	-261 -1093	*EST	368-47-8
C <sub>6</sub> H <sub>5</sub> FeIO <sub>3</sub> +					
Fe(CO) <sub>3</sub> I	8.17 IP is onset of photo	106 444 pelectron band (82LOU/I	-82±3 -344±11 HAR).	82PIL/SKI	12189-10-5
C <sub>6</sub> H <sub>5</sub> I +					
	8.685 See also: 83KLA/K	240 1003 <i>243 1019</i> COV, 83DAN/ROS, 81KII	39.4±1.4 164.9±5.9 43.2±1.4 180.9±5.9 M/KAT, 86FUJ/OHN.	77PED/RYL	591-50-4

Table 1.	<b>Positive</b>	Ion	Table		Continued
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ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>5</sub> NO <sup>+</sup>	(8.09)	(235)	(982)	48±1	201±4	75CHO/GOL	586-96-9
C <sub>6</sub> H <sub>5</sub> NOS <sup>+</sup>	(8.8) IP is onset of pho	(196) toelectron b	(819) and (82LOU/V	-7 AN).	-30	*EST	1122-83-4
C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub> + NO <sub>2</sub>	9.86±0.02 See also: 83KLA/ 0 K values from &				67.6±1 <i>92</i> L/MIG, 73GOI	77PED/RYL ./KOR.	98-95-3
C <sub>6</sub> H <sub>5</sub> NO <sub>3</sub> +	(9.1) IP is onset of pho	(187) toelectron b	(780) and.	-23	-98	•EST	88-75-5
OH NO <sub>2</sub>	(9.0) IP is onset of pho	(181) coelectron b	(757) and.	-27	-111	•EST	554-84-7
0 <sub>2</sub> N OH	(9.1) IP is onset of pho	(182) coelectron b	(762) and.	-28	-116	*EST	100-02-7

 $C_6H_5N_2$ <sup>+</sup>

(N) CN

225 943

From proton affinity of 2-pyridinecarbonitrile. (RN 100-70-9). 208.1 kcal/mol, 871. kJ/mol.

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Conti	nued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> +	From proton affin PA = 209.3 kcal/r			: (RN 100-5	4-9).		
NC NH	From proton affin PA = 210.3 kcal/r			(RN 100-4	8-1). -		
C <sub>6</sub> H <sub>5</sub> N <sub>3</sub> +							
N <sub>3</sub>	(8.4) IP is onset of phot	(286) coelectron b	(1195) pand.	92	385	29ROT/MUE	622-37-7
OT,	(9.20±0.05)	(295)	(1236)	83	348	61ZIM/GEI	95-14-7
C <sub>6</sub> H <sub>5</sub> O <sup>+</sup>							
Ö	(8.56)	(208) <i>(212)</i>	(870) <i>(888)</i>	11.4	48	82MCM/GOL	2122-46-5
	Δ <sub>f</sub> H(Ion) from app 80DEW/DAV. See						
C <sub>6</sub> H <sub>5</sub> S +							
C <sub>6</sub> H <sub>5</sub> S+	(8.63±0.10)	(254)	(1063)	55±2	230±8	82MCM/GOL	4985-62-0
$C_6H_6^+$ $CH_2=C=CHCH=C=CH_2$		(295) <i>(299)</i>	(1234) <i>(1251)</i>	98 102	411 <i>428</i>	82ROS/DAN	29776-96-3
HC≡CCH <sub>2</sub> CH = C = CH <sub>2</sub>							
110-00112011-0-0112		(316) <i>(320)</i>	(1321) <i>(1339)</i>	99 <i>103</i>	414	82ROS/DAN	33142-15-3
	IP from 82ROS/DA				432		

Table 1. Positive Ion Table - Continued

ION	1	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$		$\Delta_{\mathbf{f}}H(Ne)$		Neutral	CAS registry
	Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>6</sub> H	Tc+							
00-	-o HC≡CCH = CHCH = CH <sub>2</sub>							
	•	(9.20)	(299)	(1253)	87	365	82ROS/DAN	10420-90-3
			(303)	(1270)	91	382		
		IP from 82ROS/E	AN.					
	CH <sub>2</sub> = CHC≡CCH = CH <sub>2</sub>							
	ch2=chc=cch=ch2	(8.50±0.02)	(280)	(1172)	84	352	82ROS/DAN	821-08-9
		(0.5010.02)	(284)	(1189)	88	369		
		See also: 85DEW		(/				
	HC≡CC≡CC <sub>2</sub> H <sub>5</sub>	(9.41)	(312)	(1306)	95	398	82ROS/DAN	4447-21-6
			(316)	(1323)	99	415		
		IP from 82ROS/D	AN.					
	HC≡CCH <sub>2</sub> C≡CCH <sub>3</sub>	(9.50)	(317)	(1328)	98	411	82ROS/DAN	10420-91-4
	110-001120-00113	(7.50)	(321)	(1345)	102	428	021(00) 27 11 (	10.20 >1 .
		IP from 82ROS/D						
			·	-	•			
	HC≖CCH <sub>2</sub> CH <sub>2</sub> C≝CH	9.90	327	1369	99	414	82ROS/DAN	628-16-0
			331	1387	103	432		
		See also: 82ROS/I	DAN.					
	CH <sub>3</sub> C≡CC≡CCH <sub>3</sub>	8.92±0.05	296	1238	90	377	82ROS/DAN	2809-69-0
	01130-00-00113	6.7220.05	299	1255	94	394	OZNOO, DI IIV	2007-07-0
		See also: 82ROS/I	OAN.					
		9.2459±0.0002	233.2	975.8	19.8±0.1	82.9±0.3	77PED/RYL	71-43-2
	$\bigcirc$	ID from 94GDIIA	237.2	992.6	24.0±0.2	100.4±1	also: 81KIM/KAT,	duplicate
		81KIM/KAT, 84H		.30 K — 3.22	3±0.003 (78E1A)	AUS). 366 i	iiso. SIKIW/KAT,	aupitence
		0114114141411,0111	01170011.					
	CH <sub>2</sub>	(8.36)	(246)	(1030)	53.5	223.8	84ROT	497-20-1
			(251)	(1048)	57.8	241.9		
	"CH <sub>2</sub>							
		(8.80)	(283)	(1184)	80.4	335.5	86ROT/LEN	5291-90-7
			(286)	(1198)	<i>83</i>	349		
	™2							

Table 1. Positive Ion Table - Continued

Table 1. Positive foil Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	Δ <sub>f</sub> <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>6</sub> H <sub>6</sub> +					··					
CH <sub>2</sub>	(8.80)	(298) <i>(302)</i>	(1245) <i>(1263)</i>	95 <i>99</i>	396 <i>414</i>	82ROS/DAN	3227-90-5			
H <sub>2</sub> C CH <sub>2</sub>	IP from 82ROS/I									
	(9.0)	(294)	(1232)	87	364	82ROS/DAN	5649-95-6			
	(***)	(298)	(1250)	91	382					
	IP from 82ROS/I	OAN (onset	of photoelectro	n band).						
	8.1	(274)	(1144)	87	363	82ROS/DAN	659-85-8			
~	IP from 82ROS/I	<i>(278)</i> DAN (onset	(1163) of photoelectro	<i>91</i> n band).	381					
C <sub>6</sub> H <sub>6</sub> Br <sup>+</sup>			·			<u> </u>				
H <sub>2</sub> OBr	From proton affin	208 nity of C <sub>6</sub> H <sub>5</sub>	871 <sub>5</sub> Br (RN 108-86-	1). PA = 18	2.4 kcal/mol, 76	3. kJ/mol.				
C <sub>6</sub> H <sub>6</sub> Cl <sup>+</sup>										
H <sub>2</sub> CI	From proton affir 760. kJ/mol.	196 nity of C <sub>6</sub> H	821 <sub>5</sub> Cl (RN 108-90-	7). PA = 181	.7 kcal/mol,					
C <sub>6</sub> H <sub>6</sub> CIN+										
NH <sub>2</sub>	(8.50)	(211)	(881)	15	61	*EST	95-51-2			
NH <sub>2</sub>	(8.09±0.1)	(200)	(836)	13	55	*EST	108-42-9			
CI NH2	(≤8.18)	(≤202)	(≤844)	13	55	*EST	106-47-8			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>6</sub> F <sup>+</sup>											
H <sub>2</sub> F	From proton affi 764. kJ/mol.	155 nity of C <sub>6</sub> H	650 <sub>5</sub> F (RN 462-06-6)	). PA = 182	6 kcal/mol,						
C <sub>6</sub> H <sub>6</sub> FN <sup>+</sup>		<del></del>									
NH <sub>2</sub>	(≤8.18)	(≤164)	(≤683)	-25	-106	*EST	348-54-9				
NH2	(≤8.32)	(≤165)	(≤691)	-27	-112	*EST	372-19-0				
F NH2	(≤8.18)	(≤163)	(≤680)	-26	-109	*EST	371-40-4				
C <sub>6</sub> H <sub>6</sub> Hg <sup>+</sup> (CH <sub>3</sub> C≡C) <sub>2</sub> Hg	8.98±0.07 IP is onset of pho	(323) toelectron b	(1351) and (81FUR/PIA	116 A).	485	*EST	64705-15-3				
C <sub>6</sub> H <sub>6</sub> N <sup>+</sup>		<del>-</del> -									
ŇH	(8.26±0.1)	(247)	(1034)	57±2	237±8	82MCM/GOL	2835-77-0				
C <sub>6</sub> H <sub>6</sub> NO <sup>+</sup>					<del></del>						
O H	From proton affii 857. kJ/mol.	209 nity of nitros	874 obenzene (RN 58	36-96-9). P <i>e</i>	A = 204.8 kcal/m	ol,					
носно	From proton affir PA = (215.2) kca			/de (RN 872	-85-5).						

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mol	lon) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>6</sub> NO <sub>2</sub> +											
OH OH	From proton affir 809. kJ/mol.	189 nity of nitro	789 obenzene (RN 9	98-95-3). PA =	= 193.4 kcal/mo	ıl,					
C <sub>6</sub> H <sub>6</sub> N <sub>2</sub> +						1-					
ни	(9.36±0.03)	(294)	(1229)	78±1	326±5	*EST	4377-73-5				
C <sub>6</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> +	**** * · · · · · · · · · · · · · · · ·	······································									
NH <sub>2</sub> NO <sub>2</sub>	8.27±0.01	206	862	15±1	64±4	77PED/RYL	88-74-4				
NH <sub>2</sub>											
O <sub>NO2</sub>	8.31±0.02	207	864	15±0.5	62±2	83NIS/SAK	99-09-2				
O <sub>2</sub> N NH <sub>2</sub>	8.34±0.01	205	860	13±0.5	55±2	83NIS/SAK	100-01-6				
C <sub>6</sub> H <sub>6</sub> N <sub>4</sub> +							<del></del>				
LOLA N	(8.9) IP is onset of pho	(248) toelectron	(1037) band.	43	178	*EST	2004-03-7				
C <sub>6</sub> H <sub>6</sub> O +											
С <sub>6</sub> H <sub>6</sub> O <sup>+</sup>	8.47	173 175	722 732	-23.0±0.2 -20.4	-85.2	78KUD/KUD	108-95-2				
	IP from 84FRA/F	KA. See al	so: 84FUK/YO	S, 83KLA/KO`	v,81KIM/KAT						

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>6</sub> H <sub>6</sub> OS <sup>+</sup>	(9.20±0.05)	(206)	(862)	<del>-</del> 6	-26	*EST	88-15-3			
S CCH3	(9.32±0.05)	(209)	(875)	<del>-</del> 6	-24	*EST	1468-83-3			
С <sub>6</sub> Н <sub>6</sub> О <sub>2</sub> + ОН	(8.15) IP is onset of phot	(123) oelectron ba	(514) and.	-65±1	−272±5	79KUD/KUD	120-80-9			
ОН	(8.2) IP is onset of photo	(123) oelectron ba	(514) and.	-65.6±0.5	-274.7±2.1	79KUD/KUD	108-46-3			
но	7.95±0.03 IP from 85OIK/AE	121 3E.	505	−63±0.5	−262±2	79KUD/KUD	123-31-9			
	(9.77) IP is onset of photo		(859) nd (85GLE/JAH		-84	*EST	4505-38-8			
	(9.4) IP is onset of photo				-194	*EST	29798-87-6			
С6Н6О3+	(≤9.00±0.05) (	(≤110) (	≤463)	-97	<b>~</b> 405	80BAL/LEB	611-13-2			

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>6</sub> O <sub>4</sub> +	≤9.20	(≤107) (≤447)	-105	-441	*EST	5222-73-1
C <sub>6</sub> H <sub>6</sub> S <sup>+</sup> .						
SH	8.30±0.02 See also: 82CAR/	218 913 /KIB, 81KIM/KAT.	26.9±0.2	112.4±0.8	77PED/RYL	108-98-5
C <sub>6</sub> H <sub>6</sub> Se <sup>+</sup>		ساند نهرست الماني الساند المرياسة المرياسة المرياسة المرياسة المرياسة المرياسة المرياسة المرياسة المرياسة المر				
SeH	(≤7.7) IP is onset of pho	(≤217) (≤906) htoelectron band (81BAK/A	39 .RM).	163	*EST	645-96-5
C <sub>6</sub> H <sub>7</sub> +			<del> </del>			
H2	From proton affir	204 854 nity of benzene. (RN 71-43-	2). PA = 181	.3 kcal/mol, 759	). kJ/mol.	
(HC=CCH <sub>2</sub> CH <sub>2</sub> C≡CH)H		269 1124 nity of HC≊C(CH <sub>2</sub> ) <sub>2</sub> C≖CH ol, 819 kJ/mol.	(RN 628-16-0	) (85LIA/AUS	).	
(CH <sub>3</sub> C≡CC≡CCH <sub>3</sub> )H	From proton affir PA = 196 kcal/me	260 1087 nity of CH <sub>3</sub> C=CC=CCH <sub>3</sub> (1 ol, 819 kJ/mol.	RN 2809-69-0)	(85LIA/AUS)		
C <sub>6</sub> H <sub>7</sub> BrN <sup>+</sup> (NH <sub>2</sub> Br) H <sup>+</sup>	From proton affin	183 767 nity of 3-BrC <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> (RN	591-19-5).			
C <sub>6</sub> H <sub>7</sub> Br <sub>3</sub> Ti <sup>+</sup> H <sub>3</sub> C  B <sub>r</sub> T <sub>i</sub> B <sub>r</sub> B <sub>r</sub>	(8.6) IP is onset of phot	(80) (337) toelectron band (84TER/L	-118 OU).	-493	•EST	1277-45-8

Table 1. Positive Ion Table - Continued

		e 1. Positive ion Tal			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>7</sub> CIN <sup>+</sup> (NH <sub>2</sub> CI) H <sup>†</sup>	From proton affi 867. kJ/mol.	172 718	RN 108-42-9). PA = 207.2		
(CI NH2) HT	From proton affi 873. kJ/mol.	170 712 inity of 4-CIC $_6$ H $_4$ NH $_2$ (F	RN 106-47-8). PA = 208.6	i kcal/mol,	
NH CI	From proton affi (218.6) kcal/mol,	•	pyridine (RN 3678-62-4).		
CI NH CH3		(161) (675) inity of 2-chloro-6-methyl /mol, (916) kJ/mol.	pyridine (RN 18368-63-3)		
C <sub>6</sub> H <sub>7</sub> CINO + CH <sub>3</sub> CI N OH	-	127 531 inity of 6-chloro-1-methyl /mol, 911. kJ/mol.	-2(1H)pyridinone (RN 17	228-63-6).	
CI H OCH3	-	129 538 inity of 2-chloro-6-metho: /mol, 903. kJ/mol.	kypyridine (RN 17228-64-	7).	
C <sub>6</sub> H <sub>7</sub> Cl <sub>3</sub> Ti + CH <sub>3</sub> CI / I CI CI	(9.1) IP is onset of pho	(66) (276) otoelectron band (84TER	-144 -602 /LOU).	*EST	1282-31-1
C <sub>6</sub> H <sub>7</sub> FN <sup>+</sup>	From proton affi 866. kJ/mol.	132 552 nity of 3-fluorobenzenear	nine (RN 372-19-0). PA	= 207.0 kcal/mol,	

Table 1. Positive Ion Table - Continued

ION				A LI/No.	utanil\	Neutral	CAS registry
Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		$\Delta_{\mathbf{f}}H(Ne)$ kcal/mol		reference	number
C <sub>6</sub> H <sub>7</sub> FN <sup>+</sup> (F NH <sub>2</sub> ) H <sup>+</sup>	From proton affir 871. kJ/mol.	132 nity of 4-fluc	550 probenzeneamine	(RN 371-40	-4). PA = 208.1	kcal/mol,	
C <sub>6</sub> H <sub>7</sub> N <sup>+</sup>	7.720±0.002 IP from 84SMI/H	198 AG. See als	829 :o: 83KLA/KOV,	20.8±0.2 81KIM/KA'		77PED/RYL 85HAG/SMI.	62-53-3
O CH3	9.02±0.03 See also: 81KIM/l	232 KAT.	969	23.7±0.2	99.2±0.7	77PED/RYL	109-06-8
© CH <sub>3</sub>	9.04±0.03 See also: 81MOD	234 /DIS2, 81KI	979 IM/KAT.	25.4±0.1	106.4±0.5	77PED/RYL	108-99-6
N <sub>CH3</sub>	9.04±0.03	233	976	24.8±0.3	103.8±1.2	77PED/RYL	108-89-4
C <sub>6</sub> H <sub>7</sub> NO <sup>+</sup>							
	≤8.21±0.02	(≤194)	(≤811)	5	19	*EST	931-19-1
H <sub>3</sub> C NO	(≤8.20±0.02)	(≤195)	(≤817)	6	26	*EST	1003-73-2
H <sup>3</sup> C NO	8.12±0.02	(193)	(807)	6	24	*EST	1003-67-4

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_f H(Ic$	on)	$\Delta_{\mathbf{f}}H(Nc)$	entral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>6</sub> H <sub>7</sub> NO <sup>+</sup>							
<sup>N</sup> OCH <sub>3</sub>	(8.7) IP is onset of pho	(189) toelectron b	(787) and.	-12	<b>52</b>	*EST	1628-89-3
© och₃	(9.34±0.02)	(211)	(885)	-4	-16	•EST	7295-76-3
H <sub>3</sub> CO N	(9.58±0.02)	(218)	(911)	-3	-13	*EST	620-08-6
CH <sub>3</sub>	(8.2) IP is onset of phot	(169) coelectron b	(706) and. See also: 81	-20±2 DRE/BEC.	-85±10	*EST	694-85-9
o N-CH3	(≤8.20±0.03)	(≤186)	(≤778)	-3±2	-13±8	*EST	695-19-2
H <sub>3</sub> C N OH	(8.33)	(163)	(684)	-29±0.7	-120±3	82SUR/ELS	73229-70-6
нзс № он	(9.15±0.05)	(194)	(813)	~17±0.7	−70±3	82SUR/ELS	1121-78-4
C <sub>6</sub> H <sub>7</sub> NO <sub>2</sub> +							
OCH3	(7.5) IP is onset of phot	(151) oelectron be	(631) and.	-22	-93	*EST	1122-96-9

Table 1. Positive Ion Table - Continued

	1able 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) i kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>7</sub> NO <sub>2</sub> +	(8.21±0.05)	(158)	(660)	-32	-132	*EST	20773-98-2				
OCH <sub>3</sub> .	(8.40±0.05)	(171)	(714)	-23	<del>-</del> 96 -	•EST	14906-61-7				
C <sub>6</sub> H <sub>7</sub> NS <sup>+</sup> .	(7.6) IP is onset of phot	(203)	(849) band (82ZVE)	28 'ASH).	116	*EST	137-07-5				
©N <sub>SCH3</sub>	(8.24±0.03) See also: 81DRE/I	(223) BEC.	(933)	33	138	•est	18438-38-5				
O SCH3	(≤8.41±0.03)	(≤231)	(≤966)	37	155	*EST	18794-33-7				
H3CS ON	(≤8.73±0.03)	(≤238)	(≤997)	37	155	*EST	22581-72-2				
N-CH <sub>3</sub>	(7.69±0.03) See also: 81DRE/I	(218) BEC.	(912)	41	170	*EST	2044-27-1				
N-CH <sub>3</sub>	7.54±0.02	(239)	(999)	65	272	*EST	6887-59-8				

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>6</sub> H <sub>7</sub> NSe +	≤7.22 IP from 81DRE/I	(≤224) 3EC.	(s937)	57	240	*EST	2240-85-9			
C <sub>6</sub> H <sub>7</sub> N <sub>2</sub> O <sub>2</sub> +			<u> </u>	· · · · · · · · · · · · · · · · · · ·						
(02N NH2) H+	From proton affii PA = 207.0 kcal/			100-01-6) (	34ROL/HOU).					
C <sub>6</sub> H <sub>7</sub> N <sub>4</sub> <sup>+</sup> (N) N N H  H  H  (N) N H	From proton affir (933) kJ/mol.	185 hity of 6-me	775 thylpurine (RN 20	004-03-7). P	A = (223) kcal/r	nol,				
C <sub>6</sub> H <sub>7</sub> O +										
ОН	From proton affir	146 nity of C <sub>6</sub> H	613 <sub>5</sub> OH (RN 108-95-	2). PA = 1	96.3 kcal/mol, 82	l. kJ/mol.				
(HC≡CCH <sub>2</sub> ) <sub>2</sub> OH	From proton affir	(246) nity of (HC	(1031) •CCH <sub>2</sub> ) <sub>2</sub> O (RN 6	921-27-3). 1	PA = 190.8 kcal/	mol, 798. kJ/mol.				
C <sub>6</sub> H <sub>7</sub> P <sup>+</sup>										
PHZ	(8.47±0.01) See also: 81CAB/	(226) COW2.	(945)	31	128	*EST	638-21-1			
C <sub>6</sub> H <sub>8</sub> +		<del></del>			- <u></u>					
(E)-CH <sub>2</sub> = C = CHCH = CH	(CH <sub>3</sub> (8.32)	(244)	(1020)	52	217	*EST	20130-95-4			
(Z)-CH <sub>2</sub> =CHCH=CHCH	= CH <sub>2</sub> 8.31±0.01	233	973	41	171	70BEN/O'N	2612-46-6			
(E)-CH <sub>2</sub> = CHCH = CHCH	= CH <sub>2</sub> 8.28±0.02	(231) <i>(237)</i>	(965) <i>(991)</i>	40 <i>46</i>	166 192	*EST	821-07-8			
CH <sub>3</sub> CH = C = CHCH = CH <sub>2</sub>	2 (8.56)	(250)	(1048)	53	222	*EST	33755-64-5			

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ON Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
С6Н8+										
$CH_2 = C = C(CH_3)CH = 0$	CH <sub>2</sub> (8.54)	(249)	(1040)	52	216	*EST	25054-29-9			
		(517)	(2010)		210	201	2005 ( 20 )			
$CH_2 = C = CHC(CH_3) = 0$	CH <sub>2</sub> (8.54)	(249)	(1040)	52	216	*EST	14763-81-6			
$C_2H_5C=CCH=CH_2$	(8.91±0.01)	(260)	(1090)	55	230	*EST	13721-54-5			
	(0.5120.01)	(200)	(2000)							
$CH_3C=CC(CH_3)=CH_2$	(8.72±0.01)	(253)	(1058)	52	217	*EST	926-55-6			
	. ,	` ,	• ,							
	8.25±0.02	215.6	902.3	25.4±0.1	106.3±0.5	77PED/RYL	592-57-4			
	See also: 81KIM/l	<u>221.3</u>	<u>926.1</u>	31.1±0.1	130.1±0.5					
	Gee also. GIIQIVII									
	8.82±0.02	229	959	25.8±0.5	107.9±2	77SHA/GOL	628-41-1			
	See also: 81KIM/I	235 KAT.	985	32.0±0.5	133.9±2					
СНЗ	8.40±0.05	(217)	(907)	23	97	*EST	96-39-9			
y ,			` ,							
сн3	8.45±0.05	(218)	(911)	23	96	*EST	3727-31-9			
<b>₩</b>	G. 10 4010	(420)	(***)							
CH <sub>2</sub>	(8.40)	(223)	(931)	29	121	*EST	930-26-7			
	(0.40)	رددی	(331)	47	141	W.	/JV-2U-1			
CH <sub>2</sub>	(8.4)	(242)	(1011)	48	201	80GAJ	14296-80-1			
СН2	IP is onset of photo									

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>8</sub> +	(8.7) IP is onset of pho	(254) stoelectron b	(1063) and.	54	224	80GAJ	2045-78-5
с≡сн	(9.6) IP is onset of pho	(284) stoelectron b	(1188) and.	63	262	*EST	50786-62-4
	(8.5) IP is onset of pho	(280) toelectron b	(1170) and.	84	350	*EST	27567-82-4
	(9.1) IP is onset of pho	(271) toelectron b	(1135) and.	61	257	80ROT/KLA	3097-63-0
$\bigcirc$	(≤9.43)	(≤272)	(≤1138)	54.5	228.0	85SVY/IOF	287-12-7
S CI	(7.8) IP is onset of pho		(660) and (83JOR/M	-22 1CC).	-93	*EST	74796-12-6
C <sub>6</sub> H <sub>8</sub> F <sub>2</sub> S +  SCF <sub>2</sub>	(9.34) IP from 80SAR/W	(129) /OR.	(538)	-87	~363	*EST	77471-71-7
C <sub>6</sub> H <sub>8</sub> N + (HC=CCH <sub>2</sub> ) <sub>2</sub> NH <sub>2</sub>		262	1098	DN (021 28 4)			

From proton affinity of (HC=CCH<sub>2</sub>)<sub>2</sub>NH (RN 6921-28-4). PA = 216.1 kcal/mol, 904. kJ/mol.

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number						
C <sub>6</sub> H <sub>8</sub> N <sup>+</sup>											
H <sub>2</sub> NH <sub>2</sub>	From proton affin	177 740 ity of C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> (RN 62	-53-3). PA = 209.5 kcal/mol,	876. kJ/mol.							
CH3	From proton affin 942. kJ/mol.	164 688 ity of 2-methylpyridine (l	RN 109-06-8). PA = 225.0 kg	cal/mol,							
CH3 H+	From proton affin 938. kJ/mol.	167 698 ity of 3-methylpyridine (1	RN 108-99-6). PA = 224.1 kg	cal/mol,							
CH3 H+	From proton affin 942. kJ/mol.	165 692 ity of 4-methylpyridine (l	RN 108-89-4). PA = 225.2 kg	eal/mol,							
C <sub>6</sub> H <sub>8</sub> NO <sup>+</sup>				in the second							
(NH <sub>2</sub> ) H+	From proton affin	131 547 ity of 2-HOC <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> . I	PA = 214.2 kcal/mol, 896. kJ/	mol.							
OH NH <sub>2</sub>	From proton affin 896. kJ/mol.	130 545 ity of 3-(OH)C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> (	(RN 591-27-5). PA = 214.2 I	scal/mol,							
©N OCH3	From proton affini 928. kJ/mol.	131 550 ty of 2-methoxypyridine	(RN 1628-89-3). PA = 221.9	kcai/mol,							
©N OCH3	From proton affini 935. kJ/mol.	138 579 ty of 3-methoxypyridine	(RN 7295-76-3). PA = 223.6	kcal/mol,							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>6</sub> H <sub>8</sub> NO +	From proton affii 952. kJ/mol.	135 nity of 4-met	565 thoxypyridine (	(RN 620-08-6)	. PA = 227.6	kcal/mol,	
CH3 OH	From proton affir 921. kJ/mol.	125 nity of 1-met	524 hyl-2-pyridino	ne (RN 694-85	5-9). PA = 23	20.2 kcal/mol,	
C <sub>6</sub> H <sub>8</sub> NS <sup>+</sup>	From proton affir PA = 222.0 kcal/i			ine (RN 18438	-38-5).		
H <sub>3</sub> CS NH	From proton affir PA = (225.5) kca			ine (RN 22581	-72-2).		
C <sub>6</sub> H <sub>8</sub> N <sub>2</sub> + NH <sub>2</sub> NH <sub>2</sub>	7.2 See also: 81NEL/	(188) GRE.	(787)	22±1	92±5	*EST	95-54-5
NH2 NH2	7.14	(186)	(777)	21	88	*EST	108-45-2
H <sub>2</sub> N NH <sub>2</sub>	6.87±0.05 See also: 81CAB/6	(181) COW2.	(760)	23	97	*EST	106-50-3
NHCH <sub>3</sub>	(8.26±0.05)	(220)	(924)	30	127	*EST	4597-87-9

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	e ion lable -	Contini	nea	· · · · · · · · · · · · · · · · · · ·	
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne-	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>8</sub> N <sub>2</sub> +	(8.53±0.05)	(231)	(965)	34	142	•EST	18364-47-1
H3CN ON	(8.75±0.05)	(233)	(972)	31	128	*EST	1121-58-0
O NHNH2	Values of 7.64 and compound. Repo measurements are because of the large	rted values of usually sign	of IP's of hydrazii nificantly higher t	nes determin han the adia	ned by threshold batic value	77PED/RYL	100-63-0
H <sub>3</sub> C N CH <sub>3</sub>	(8.80)	(270)	(1128)	67±0.7	279±3	*EST	108-50-9
C <sub>6</sub> H <sub>8</sub> N <sub>2</sub> O +	(7.67±0.05)	(188)	(787)	11	47	*EST	54818-70-1
NHCH3	(7.97±0.05)	(198)	(829)	14	60	*EST	54818-71-2
снзни Омо	(7.45±0.05)	(185)	(775)	13	56	*EST	1122-92-5
C <sub>6</sub> H <sub>8</sub> O <sup>+</sup> HC=CCOCH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	(10.00±0.04) IP from 86TUR/H	(233) (AV2.	(975)	2.5	10.5	•EST	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ <sub>f</sub> H(l kcal/mo	ion) kJ/mol	Δ <sub>f</sub> H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>8</sub> O +	9.23±0.05	(185)	(775)	−28±0.7	-116±3	*EST	930-68-7				
	(≤9.42)	(≤185)	(≤773)	-33±0.7	-136±3	•EST	4096-34-8				
СH <sub>3</sub>	(8.25±0.10) IP from 85GRU/S	(166) SPI.	(694)	-24	-102	*EST					
нзс о снз	(8.39±0.10) IP from 85GRU/S	(166) SPI.	(694)	-28	-116	*EST	3710-43-8				
нзс о снз	(8.25±0.10) IP from 85GRU/S	(165) PPI.	(690)	-25	-106	*EST	625-86-5				
C2H5	(8.45±0.05)	(171)	(715)	-24	-100	*EST	3208-16-0				
	(≤9.44±0.02)	(≤207)	(≤867)	-11	-44	*EST	6705-50-6				
С <sub>6</sub> H <sub>8</sub> O <sub>2</sub> +	9.52±0.05	(141)	(589)	-79	-330	*EST	504-02-9				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) i kJ/moi	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>8</sub> O <sub>2</sub> S +											
	< 9.6 IP is onset of pho		(<784) band (84AIT/0	-34 GOS).	-142	*EST	84451-42-3				
C <sub>6</sub> H <sub>8</sub> P <sub>2</sub> +	≤8.78 IP from 81CAB/C	(≤237) :OW2.	(≤990)	34	143	*EST	78550-67-1				
C <sub>6</sub> H <sub>8</sub> S <sup>+</sup>											
H <sub>3</sub> C S CH <sub>3</sub>	(8.10) See also: 83BOC/	(199) ROT.	(832)	12	50	*EST	638-02-8				
H <sub>3</sub> C CH <sub>3</sub>	(≤8.55) IP from 83BOC/R	(≤209) COT.	(≤875)	12	50	•EST	632-15-5				
S C2H5	(8.67±0.05)	(215)	(898)	15	61	*EST	872-55-9				
C T CIT		<u></u>									
C <sub>6</sub> H <sub>8</sub> Si <sup>+</sup>	(9.09)	(236)	(988)	27	111	*EST	694-53-1				
		<del></del>									
C <sub>6</sub> H <sub>9</sub> + CH <sub>3</sub> C≖CC(CH <sub>3</sub> ) <sub>2</sub>	From appearance	77920-98-0									
		191	800								
$\langle \cdot \rangle$	From proton affinities of 1,3-c-C <sub>6</sub> H <sub>8</sub> (RN 592-57-4) PA = (200) kcal/mol, (837) kJ/mol and 1,4-c-C <sub>6</sub> H <sub>8</sub> (RN 628-41-1) (83GAU/HOU) PA = (200) kcal/mol, (837) kJ/mol. Value derived from appearance potential measurements (84LOS/HOL) is the same.										

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>6</sub> H <sub>9</sub> +	From appearance	190 potential m	795 easurements (8	4LOS/HOL)			72026-92-7
н <sub>3</sub> с	From proton affir PA = (212) kcal/			cyclobutene.	(RN 15082-13	-0).	
нзс снз	From appearance	199 potential m	833 easurements (&	4LOS/HOL)			26827-04-3
C <sub>6</sub> H <sub>9</sub> Br <sup>+</sup>			<del></del>				
Br	(9.5) IP is onset of pho	(235) toelectron b	(983) and (84DEL/A)	16 3E).	66	*EST	77379-00-1
C <sub>6</sub> H <sub>9</sub> ClHg <sup>+</sup>			, , , , , , , , , , , , , , , , , , ,				
—н gCl	(8.8) IP is onset of pho	(212) toelectron b	(887) and (81BAI/CH	9 I).	38	*EST	10080-39-4
C <sub>6</sub> H <sub>9</sub> Cl <sub>2</sub> P <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> CC≖CPCl <sub>2</sub>	(≤9.58) IP from 81CAB/C		(≤883)	-10	<del>-4</del> 1	*EST	77376-08-0
C <sub>6</sub> H <sub>9</sub> I +							
	(8.8) IP is onset of photon	(233) toelectron ba	(976) and (84DEL/A)	30 BE).	127	*EST	74725-75-0
$C_6H_9N^+$ (E)-(CH <sub>3</sub> ) <sub>2</sub> NCH = CHC=C	и						1
(1)-(0113/211011 - 011010	(7.7)	(260)	(1087)	82±1	344±6	*EST	2206-24-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>9</sub> N <sup>+</sup> H <sub>3</sub> C  CH <sub>3</sub>	(7.54±0.02)	(184)	(767)	10	40	*EST	625-82-1
H <sub>3</sub> C CH <sub>3</sub>	(≤7.69)	(≤187)	(≤782)	9.5±0.2	39.8±0.8	77PED/RYL	625-84-3
H C2H5	(7.97±0.05)	(197)	(823)	13	54	*EST	1551-06-0
C <sub>6</sub> H <sub>9</sub> N <sub>2</sub> <sup>+</sup> (NH <sub>2</sub> NH <sub>2</sub> H <sup>+</sup>	From proton affir 890. kJ/mol.	175 hity of 1,2-C	732 <sub>6</sub> H <sub>4</sub> (NH <sub>2</sub> ) <sub>2</sub> (RN	95-54-5). P	A = 212.8 kcal/n	nol,	
NH <sub>2</sub>	From proton affir 930.5 kJ/mol.	164 hity of 1,3-C	688 6H <sub>4</sub> (NH <sub>2</sub> ) <sub>2</sub> (RN	108-45-2). l	PA = 222.4 kcal/	mol,	
(H <sub>2</sub> N NH <sub>2</sub> ) H	From proton affir 903. kJ/mol.		723 <sub>5</sub> H <sub>4</sub> (NH <sub>2</sub> ) <sub>2</sub> (RN	106-50-3). I	PA = 215.9 kcal/	mol,	
C <sub>6</sub> H <sub>9</sub> N <sub>3</sub> +  H <sub>3</sub> C  CH <sub>3</sub> CH <sub>3</sub>	≤9.4 IP from 83GLE/S	(≤267) PA.	(≤1118)	50	211	*EST	33209-85-7
H <sub>3</sub> C N CH <sub>3</sub>	(≤8.84)	(≤274)	(≤1146)	70	293	*EST	24108-36-9

Table 1.	Positi	ve Io	n Tab	le -	Cont	inued

		I. PUSITIV		- Counn			
ION I	onization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>9</sub> O +							
н <sub>3</sub> С СН <sub>3</sub>	From proton affin PA = 213.0 kcal/n	-		RN 3710-43-8)	(85HOU/RC	DL).	
H <sub>3</sub> C CH <sub>3</sub>	From proton affin PA = 209.0 kcal/n	-		RN 625-86-5) (	85HOU/RO	L, 86MAU).	
H <sub>3</sub> C CH <sub>3</sub>	From proton affin PA = 207.1 kcal/n	•		RN 20843-07-6	) (85HOU/R	OL).	
	From proton affin (86HOU/SCH). P				N 6705-50-6)		
C <sub>6</sub> H <sub>9</sub> O <sub>2</sub> +		······································	·				
он Он	From proton affini PA = 203.9 kcal/n			ne (RN 765-87-	7) (83MAU).		
ОН	From proton affini 882. kJ/mol.	76 ity of 1,3-cyc	318 clohexanedion	ie (RN 504-02-	9). PA = 210	0.8 kcal/mol,	
$C_6H_{10}^+$ $CH_2 = C = CHCH_2C_2H_5$	(0.00+0.05)	(227)	(990)	29	122	*EST	592-44-9
(E)-CH <sub>2</sub> =CHCH=CHC <sub>2</sub> H	(9.00±0.05) 5 8.51 IP from 81MAS/M	(237) (210) (OU.	(878)	14	57	•EST	20237-34-7
(Z)-CH <sub>2</sub> =CHCH <sub>2</sub> CH=CH	CH <sub>3</sub> (9.04±0.05)	(227)	(950)	19	80	*EST	7318-67-4
(E)-CH <sub>2</sub> =CHCH <sub>2</sub> CH=CH	CH <sub>3</sub> (8.98±0.05)	(225)	(940)	18	74	*EST	7319-00-8

Table 1. Positive Ion Table - Continued

	Table	I. FUSICIA	e ion table -	Contin	ueu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
$\frac{C_6H_{10}^+}{CH_2=CHCH_2CH_2CH=}$	-						500 40 5
	9.29±0.05	234	980	20.1±0.1	84.1±0.6	77PED/RYL	592-42-7
$CH_3CH = C = CHC_2H_5$	(8.76±0.05)	(228)	(955)	26	110	*EST	592-49-4
(Z),(Z)-CH <sub>3</sub> CH = CHCH	H = CHCH <sub>3</sub> (8.27) See also: 81MAS/	(203) MOU.	(850)	12	52	*EST	6108-61-8
(E),(Z)-CH <sub>3</sub> CH = CHCH	I = CHCH <sub>3</sub> 8.24±0.02 See also: 81MAS/	(202) MOU.	(844)	12	49	*EST	5194-50-3
(E),(E)-CH <sub>3</sub> CH = CHCH	I = CHCH <sub>3</sub> 8.18±0.06 See also: 81MAS/	(199) MOU.	(832)	11	43	*EST	5194-51-4
$CH_2 = C = CHCH(CH_3)_2$	(9.06±0.05)	(236)	(987)	27	113	*EST	13643-05-5
$CH_2 = C = C(CH_3)C_2H_5$	(8.74±0.05)	(227)	(951)	26	108	*EST	7417-48-3
(CH <sub>3</sub> ) <sub>2</sub> C = CHCH = CH <sub>2</sub>	8.25 IP from 81MAS/N	(201) MOU, 82LE	(839) V/LIA.	10	43	70BEN/O'N	926-56-7
(Z)-CH <sub>2</sub> = CHC(CH <sub>3</sub> ) =	CHCH <sub>3</sub> 8.42 IP from 81MAS/I	(205) MOU.	(859)	11	47	*EST	2787-43-1
(E)-CH2 = CHC(CH3) =	CHCH <sub>3</sub> (8.38) IP from 81MAS/I	(204) MOU.	(852)	10	43	*EST	2787-45-3
(E)-CH2=C(CH3)CH=	CHCH <sub>3</sub> 8.43 IP from 81MAS/I	(205) MOU.	(856)	10	43	*EST	926-54-5
$CH_2 = C(CH_3)CH_2CH =$	CH <sub>2</sub> (9.16±0.05)	(228)	(956)	17	72	*EST	763-30-4
CH <sub>2</sub> =CHCH(CH <sub>3</sub> )CH=	= CH <sub>2</sub> (9.40±0.05)	(235)	(985)	19	78	*EST	1115-08-8
$(CH_3)_2C = C = CHCH_3$	8.64±0.05	(222)	(930)	23	96	*EST	3043-33-2
$CH_2 = C(CH_3)C(CH_3) =$	CH <sub>2</sub> 8.71 See also: 81MAS,	211 /MOU.	884	10±0.2	44±1	77PED/RYL	513-81-5

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Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Nekal/mol		Neutral reference	CAS registry number			
$C_6H_{10}^+$ $C_2H_5C(=CH_2)CH=CH_2$			-							
9.13c(=012)c11=012	(8.79±0.02) See also: 81MAS/	(216) MOU.	(904)	13	56	*EST	3404-63-5			
C <sub>4</sub> H <sub>9</sub> C≖CH	(9.95±0.05) See 81HOL/FIN.	(258)	(1082)	29±0.2	122±1	79ROG/DAG	693-02-7			
C <sub>3</sub> H <sub>7</sub> C≡CCH <sub>3</sub>	9.366±0.005	242	1012	26±0.5	108±2	79ROG/DAG	764-35-2			
C <sub>2</sub> H <sub>5</sub> C≡CC <sub>2</sub> H <sub>5</sub>	9.323±0.005	240	1005	25±0.5	106±2	79ROG/DAG	928-49-4			
(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> C≖CH	(9.83±0.05)	(254)	(1064)	28	116	*EST	7154-75-8			
СН <sub>3</sub> СН <sub>2</sub> СН(СН <sub>3</sub> )С≖СН	9.79±0.05	253	1058	27±0.2	113±1	79ROG/DAG	922-59-8			
(CH <sub>3</sub> ) <sub>3</sub> CC≖CH	(9.80±0.05) See also: 81CAB/0	(251) COW, 8501	(1051) RL/BOG.	25±0.7	106±3	77KUP/SHI	917-92-0			
(CH <sub>3</sub> ) <sub>2</sub> CHC¤CCH <sub>3</sub>	9.31±0.05	(238)	(995)	23	97	*EST	21020-27-9			
	8.945±0.01 Sec also: 81KIM/k	205.2 CAT.	858.4	-1.1±0.1	-4.6±0.5	77PED/RYL	110-83-8			
Сн3	8.55±0.05	196	821	-1±0.2	-4±1	82ALL/DOD	693-89-0			
С-сн3	8.95±0.01	208	871	2±0.5	7±2	79FUC/PEA	1120-62-3			
СН2	8.55±0.01	200	837	3±0.5	12±2	82ALL/DOD	1528-30-9			
СН-СН3	(8.70±0.05)	(221)	(925)	21	86	•EST	1528-21-8			

Table 1. Positive Ion Table - Continued

			e ion Table -	Contini			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(New kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>10</sub> +	(≤9.44)	(≤242)	(≤1010)	24	99	*EST	2597-49-1
СКСН3	(8.66±0.05)	(222)	(930)	22	94	82KOZ/MAS	4663-22-3
н <sub>3</sub> С Сн <sub>3</sub>	(8.58±0.05) See also: 81PLE/\	(239) /IL.	(1001)	41	173	•EST	3664-56-0
$\Diamond$	(9.16±0.02)	(220.4)	(922.1)	9.2±0.1	38.3±0.4	77PED/RYL	285-58-5
	(9.0) IP is onset of pho	(237) toelectron t	(993) pand.	30	125	82WIB/WEN	186-04-9
A	(9.7) IP is onset of pho	(239) toelectron b	(1000) pand (84DEL/PIG	15.3 i).	64.0	82WIB/WEN	285-86-9
	(8.9) IP is onset of pho	(236) toelectron t	(988) pand (82SPA/GLE	31±1 3).	129±4	77PED/RYL	5685-46-1
$\Diamond$	(9.1) IP is onset of pho	(250) toelectron b	(1045) pand.	40	167	•EST	157-45-9

Table 1. Positive Ion Table - Continued

			C TOIL TUDIC	Contin			
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>10</sub> Br <sub>2</sub> +							
Br	10.02±0.02	(206)	(863)	-25	-104	*EST	7429-37-0
Br Br	(9.94±0.02)	(204)	(855)	-25	-104	•EST	19246-38-9
C <sub>6</sub> H <sub>10</sub> F <sub>3</sub> O <sub>2</sub> + CF <sub>3</sub> C(OH)O(n-C <sub>4</sub> H <sub>9</sub> )	From proton affin 777. kJ/mol.	-79 hity of CF <sub>3</sub> C	-332 OO(n-C <sub>4</sub> H <sub>9</sub> ) (R	N 367-64-6)	. PA = 185.8 kca	al/mol,	
C <sub>6</sub> H <sub>10</sub> N <sup>+</sup>							
H <sub>3</sub> C H <sub>CH<sub>3</sub></sub>	From proton affin PA = 218.2 kcal/r			.N 625-84-3)	(86MAU/LIE).		
C <sub>6</sub> H <sub>10</sub> N <sub>2</sub> +	· · · · · · · · · · · · · · · · · · ·		····			, <u>,</u>	
	(7.79±0.04)	(218)	(913)	38	161	77OTH/OLS	3310-62-1
C <sub>6</sub> H <sub>10</sub> N <sub>2</sub> O +	(≤9.30±0.03)	(≤237)	(≤990)	22.08±.44	92.38±1.84	83BYS	25926-96-9
C <sub>6</sub> H <sub>10</sub> N <sub>2</sub> S +			<del></del>				
CH <sub>2</sub> SCH <sub>3</sub>	(7.9) IP is onset of phot	(208) oelectron b	(869) and (80KLA/BU	26 T).	107	*EST	75899-43-3

Table 1. Positive Ion Table - Continued

	Table	1. 1 0311	ive full table	e - Contin			
ION Neutral	Ionization potential	•	Ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>10</sub> N <sub>2</sub> S <sub>2</sub> + S S N-CH <sub>3</sub>	≤7.82 IP from 81HEN/	(≤236) ISA.	(≤986)	55	232	*EST	78134-03-9
C <sub>6</sub> H <sub>10</sub> N <sub>3</sub> O <sub>2</sub> +  HN CH <sub>2</sub> -CH COOH	From proton affi	103 nity of L-hi	431 istidine. PA =	231.9 kcal/mo	l, 970. kJ/mol.		
$C_6H_{10}O^+$ (E)-n-C <sub>3</sub> H <sub>7</sub> CH = CHCHO	(9.65)	(187)	(782)	-36	-149	*EST	505-57-7
CH <sub>3</sub> CH <sub>2</sub> CH = C(CH <sub>3</sub> )CH	O (9.54)	(181)	(758)	-39	-162	*EST	623-36-9
$CH_3CH = C(C_2H_5)CHO$	(9.53)	(181)	(757)	-39	-162	*EST	19780-25-7
iso-C <sub>3</sub> H <sub>7</sub> COCH = CH <sub>2</sub>	(9.39)	(177)	(741)	-39	-165	*EST	1606-47-9
$(E)$ - $CH_3CH = CHC(=O)C$	(9.32)	(175)	(730)	<b>–</b> 40	-169	*EST	2497-21-4
$CH_3CH = C(CH_3)C(=0)C$	CH <sub>3</sub> (9.35)	(172)	(719)	<del>-4</del> 4	-183	*EST	565-62-8
$(CH_3)_2C = CHC(=O)CH_3$	9.08±0.03	(165)	(693)	<del>-4</del> 4	-183	*EST	141-79-7
Ċ	9.14±0.01 See also: 86SPA/	157 RAD.	656	-54±0.5	−226±2	77PED/RYL	108-94-1
CH <sub>3</sub>	(8.88) IP from 84ALA/I	(173) RYE.	(724)	-32	-133	*EST	2270-61-3

Table 1. Positive Ion Table - Continued

YOM			ive ion Tabl				
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>10</sub> O +							
$\bigcirc$	(9.82) IP from 84ALA/I	(197) RYE.	(822)	<b>-</b> 30	-125	*EST	286-20-4
	(≤9.57±0.02)	(≤177)	(≤740)	<del>-</del> 44	-183	74PIH/TAS	279-49-2
C <sub>6</sub> H <sub>10</sub> OS <sup>+</sup> CH <sub>3</sub> SC(CH <sub>3</sub> ) = CHC(= C	O)CH <sub>3</sub> (8.15) IP is onset of pho	(152) toelectron	(636) band (81JOR/	-36 CAR).	-150	*EST	60887-86-7
C <sub>6</sub> H <sub>10</sub> OSi <sup>+</sup>							
O SI-CH3	≤8.62 IP from 83ZYK/E	(≤165) ERC.	(≤689)	-34	-143	*EST	13271-68-6
C <sub>6</sub> H <sub>10</sub> O <sub>2</sub> +							
(E)-CH <sub>3</sub> CH = CHCOOC <sub>2</sub>	H <sub>5</sub> (≤10.11)	(≤143)	(≤599)	-90±0.5	−376±2	77PED/RYL	623-70-1
	(8.6) IP is onset of phot	(163) toelectron	(683) band (84GLE/	-35 DOB).	-147	*EST	51272-66-3
	8.4 IP is onset of phot	(159) oelectron	(663) band.	-35	-147	*EST	280-53-5
C <sub>6</sub> H <sub>10</sub> O <sub>3</sub> P +							
	From proton affini PA = 213.8 kcal/m			haadamantane	: (RN 281-33-4)	) <b>.</b>	

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>6</sub> H <sub>10</sub> O <sub>4</sub> + C <sub>2</sub> H <sub>5</sub> OCOCOOC <sub>2</sub> H <sub>5</sub>	(9.8) IP is onset of pho	(49) toelectron	(206) band.	−177±2	-740±9	77PED/RYL	95-92-1
С <sub>6</sub> H <sub>10</sub> S +							
€CH2	9.22 IP from 80SAR/W	(221) /OR.	(923)	8	34	*EST	50550-56-6
C <sub>6</sub> H <sub>11</sub> + CH <sub>3</sub> CH=CHC(CH <sub>3</sub> ) <sub>2</sub>	From proton affin (870.) kJ/mol.	(169) lity of CH <sub>3</sub>	(706) CH = CHC(CH	I <sub>3</sub> ) = CH <sub>2</sub> . (R	N 1118-58-7). I	<sup>2</sup> A = (207.9) kcal/n	noi,
$C_2H_5C(CH_3)CH = CH_2$	From proton affin (860.6) kJ/mol.	(170) iity of CH <sub>3</sub>	(712) CH = C(CH <sub>3</sub> )(	CH = CH <sub>2</sub> . (R	N 4549-74-0).  I	PA = (205.7) kcal/n	nol,
(CH3)2CC(CH3) = CH2	From proton affin (846.) kJ/mol.	(174) ity of CH <sub>2</sub>	(728) = C(CH <sub>3</sub> )C(C	H <sub>3</sub> ) = CH <sub>2</sub> . (F	RN 513-81-5).   I	<sup>o</sup> A = (202.1) kcal/n	nol,
O.	From proton affin (792) kJ/mol.	(175) ity of cyclo	(733) hexene (RN 11	18 0-83-8). PA =	77 = (189) kcal/mo	81TSA ol,	3170-58-9
Сн3	From proton affin 840. kJ/mol and 1- and from hydride 76GOR/MUN, 85	methylcycl	opentene (RN le transfer equi	693-89-0), PA	= 196.9 kcal/n	nol, 824. kJ/mol,	
СН <sub>3</sub>	From appearance	(179) potential n	(747) neasurements (	81HER/SIC).			
$\left(\begin{array}{c} CH_3 \\ CH_3 \end{array}\right)$ H <sup>+</sup>	From proton affin PA = (201) kcal/r			tene. (RN 150	1-58-2).		

Table 1. Positive Ion Table - Continued

			ive ion rap		inueu		
ION Neutral	Ionization potential eV		(Ion) ol kJ/moi	Δ <sub>f</sub> H(i kcal/m	Neutral) ol kJ/mol	Neutral reference	CAS registry number
С <sub>6</sub> H <sub>11</sub> + - сссн <sub>3</sub> 1 <sub>2</sub>	From proton affin 874. kJ/mol.	179 uity of 2-cy	750 yclopropylprop	ene (RN 4663	-22-3). PA = 2	209.0 kcal/mol,	
(CH=CH <sub>2</sub> )H <sup>+</sup>	From proton affin PA = (206) kcal/r			clopropane (F	N 16906-27-7).		
(H <sub>3</sub> C) CH <sub>3</sub> H <sup>+</sup>	From proton affin PA = (214) kcal/n			opropene. (RI	N 3664-56-0).		
C <sub>6</sub> H <sub>11</sub> Br <sup>+</sup>				<del></del>			
Br	(9.85±0.01)	(200)	(835)	-27	-115	*EST	108-85-0
C <sub>6</sub> H <sub>11</sub> Cl <sup>+</sup>							
CI	(10.10±0.01)	(194)	(810)	−39±1	-164±4	77PED/RYL	542-18-7
C <sub>6</sub> H <sub>11</sub> ClHg <sup>+</sup>		- 11111					
HgCI	9.2 IP is onset of photo	(188) Delectron	(787) band (81BAI/0	-24 CHI2).	-101	*EST	24371-94-6
C <sub>6</sub> H <sub>11</sub> F <sub>3</sub> NO <sup>+</sup> CF <sub>3</sub> C(OH)NH(n-C <sub>4</sub> H <sub>9</sub> )							
	From proton affini 852. kJ/mol.	-54 ty of CF <sub>3</sub>	-226 CONH(n-C <sub>4</sub> H	9) (RN 400 <b>-</b> 59	9-9). PA = 203	.6 kcal/mol,	

Table 1. Positive Ion Table - Continued

		1. 1 03111	e ion table	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>11</sub> I <sup>+</sup>	9.003	195	818	-12±1	−51±4	77PED/RYL	626-62-0
C <sub>6</sub> H <sub>11</sub> N <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
(E)-CH <sub>3</sub> CH = CHCH = N	NC <sub>2</sub> H <sub>5</sub> (8.9) IP is onset of pho	(225) toelectron b	(941) pand.	20±1	82±6	*EST	3653-19-8
(CH <sub>2</sub> =CHCH <sub>2</sub> ) <sub>2</sub> NH	(8.2) IP is onset of pho	(224) toelectron b	(937) pand.	35±1	146±6	*EST	124-02-7
cH <sub>3</sub>	(≤8.67±0.05)	(≤219)	( <b>≤</b> 914)	19±2	78±10	*EST	694-55-3
	(7.9) IP from onset of p	(220) shotoelectro	(919) on band (81MUL	38 /PRE).	157	•EST	
	(7.7) IP is onset of phot	(215) coelectron b	(900) and (81MUL/PF	38 RE, 81MUL/	157 PRE2).	•EST	
	(7.6) IP is onset of phot	(220) coelectron b	(919) and (81MUL/PR	44 RE, 81MUL/	186 PRE2).	*EST	
C <sub>6</sub> H <sub>11</sub> NO +	(9.07±0.02)	(150)	(629)	-58.8±0.3	-246.2±1.2	77PED/RYL	105-60-2
— мон	(8.97±0.03) IP from 79GOL/K	(186) :UL.	(779)	-21	-86	*EST	100-64-1

Table 1. Positive Ion Table - Continued

	Table 1	r. Pusiti	ve Ion Table	- Contin	<u> </u>		,
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>11</sub> NO +	≤8.92 IP from 85TRE/R.	≤149 AD.	≤624	-57±0.7	-237±3	77PED/RYL	931-20-4
H <sub>3</sub> C—N—0	(8.3) IP from 80SAR/W	(155) OR. Sec a	(648) Iso: 86SPA/RAI	-37 ).	-153	•EST	1445-73-4
$\mathcal{E} = \sqrt{\mathbf{S} - \mathbf{Q}} $	(≤10.0)	(≤169)	(≤707)	-62	-258	•EST	30980-11-1
С <sub>6</sub> H <sub>11</sub> O <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> CCHC(ОН)CH <sub>3</sub>	From proton affini PA = (210) kcal/n			))CH <sub>3</sub> (RN 14	41-79-7).		
(СН <sub>2</sub> СНСН <sub>2</sub> ) <sub>2</sub> ОН	From proton affini 838. kJ/mol.	158 ity of (CH <sub>2</sub>	661 = CHCH <sub>2</sub> ) <sub>2</sub> O (	RN 557-40-4)	). PA = 200.¢	ł kcal/mol,	
OH .	From proton affini PA = 201.4 kcal/m			08-94-1) (86SA	AN/BAL).		
( ) H+	From proton affini PA = 203 kcal/mol			7-oxa- (RN 2	79-49-2).		
С <sub>6</sub> H <sub>11</sub> O <sub>2</sub> <sup>+</sup> сн <sub>3</sub> С(он)сн <sub>2</sub> сн <sub>2</sub> сосн	From proton affini 892. kJ/mol.	64 ty of CH <sub>3</sub> C	269 COCH <sub>2</sub> CH <sub>2</sub> COC	CH <sub>3</sub> (RN 110	-13-4). PA =	83MAU 213.2 kcal/mol,	
C <sub>6</sub> H <sub>11</sub> P <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> CC=CPH <sub>2</sub>	≤9.05 IP from 81CAB/CC	-	(≤1028)	37	155	*EST	77376-07-9

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	-		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>6</sub> H <sub>12</sub> +											
1-C <sub>6</sub> H <sub>12</sub>	9.44±0.04	207.7	869.0		-10.0±0.2	-41.8±1	81WIB/WAS	592-41-6			
$(Z)$ -2- $C_6H_{12}$	(8.97±0.01)	(195.5)	(817.8)		-11.4±0.2	-47.7±1	81WIB/WAS	7688-21-3			
(E)-2-C <sub>6</sub> H <sub>12</sub> .	(8.97±0.01)	(194.5)	(814.0)		~12.3±0.2	-51.5±1	81WIB/WAS	4050-45-7			
(Z)-3-C <sub>6</sub> H <sub>12</sub>	(8.95±0.01)	(195.2)	(816.7)		-11.2±0.2	-46.8±0.8	81WIB/WAS	7642-09-3			
(E)-3-C <sub>6</sub> H <sub>12</sub>	8.96±0.02	194.5	813.9		-12.1±0.2	-50.6±1	81WIB/WAS	13269-52-8			
$C_2H_5CH_2C(CH_3) = CH_2$	(9.08±0.01)	(195)	(817)		-14.2±0.3	-59.4±1	77PED/RYL	763-29-1			
$C_2H_5CH(CH_3)CH = CH_2$	(9.44) IP from 81HOL/I	(206) FIN.	(861)		−11.8±0.4	-49.5±1.5	77PED/RYL	760-20-3 29564-68-9			
$(CH_3)_2CHCH_2CH = CH_2$	(9.45±0.01)	(206)	(861)		-12±0.5	-51±2	77PED/RYL	691-37-2			
$(C_2H_5)_2C = CH_2$	(9.06±0.02)	(196)	(818)		-13.4±0.3	-56.0±1	77PED/RYL	760-21-4			
$(CH_3)_2CHC(CH_3) = CH_2$	(9.07±0.01)	(194)	(812)		-15.1±0.2	-63.3±0.8	77PED/RYL	563-78-0			
$(CH_3)_3CCH = CH_2$	9.45±0.01	203	851		-14.5±0.2	-60.7±0.9	77PED/RYL	558-37-2			
$(Z)-CH_3CH = C(CH_3)C_2H$	(8.58) IP from 81HOL/F	(183) IN.	(766)	,	-14.9±0.4	-62.3±1	77PED/RYL	922-61-2			
(Z)-(CH <sub>3</sub> ) <sub>2</sub> CHCH = CHCH	<sup>-1</sup> 3 (8.98±0.01)	(193)	(809)		-13.7±0.2	-57.5±1	77PED/RYL	691-38-3			
(E)-(CH <sub>3</sub> ) <sub>2</sub> CHCH = CHCF	43 (8.97±0.01)	(192)	(804)		-14.7±0.3	-61.5±1	77PED/RYL	674-76-0			
(CH3)2C = CHC2H5	(8.58) IP from 81HOL/F	(182) IN.	(761)		-16.0±0.3	-66.8±1	77PED/RYL	625-27-4			
(CH3)2C = C(CH3)2	8.27±0.01	174	729		-16.6±0.2	−69.3±0.8	77PED/RYL	563-79-1			
$\bigcirc$	9.86±0.03 From charge trans (82SIE/MAU; 82L			fluor	benzenes;		77PED/RYL preted. See also: 81KIM/KA	110-82-7 T.			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ON Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	$\Delta_f H$ (Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry					
C <sub>6</sub> H <sub>12</sub> +										
CH <sub>3</sub>	9.85±0.03 From charge trans	202 844 sfer equilibrium constant	-25.3±0.1 -105.9±0.4 relative to cyclohexane (76LIA	77PED/RYL /AUS).	96-37-7					
H <sub>3</sub> C CH <sub>3</sub>	(8.90) IP from 85LAD/F	(197) (825) IAR.	-8.0 -33.5	*EST						
C <sub>6</sub> D <sub>12</sub> +		· · · · · · · · · · · · · · · · · · ·		<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	· · · · · · · · · · · · · · · · · · ·					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			tuorobenzenes; data re-interp nent leads to IP = 9.88 eV.	reted.	1735-17-7					
C <sub>6</sub> H <sub>12</sub> N <sup>+</sup> (CH <sub>2</sub> CHCH <sub>2</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affin 940. kJ/mol.	175 735 ity of $(CH_2 = CHCH_2)_2N$	H (RN 124-02-7). PA = 224.	7 kcal/mol,						
6H <sub>12</sub> NO +										
N OCH3	From proton affin PA = 228.1 kcal/n		methoxypyridine (RN 53687-7	79-9).						
CH3 OH	From proton affin 917.5 kJ/mol.	90 376 ity of 1-methylpiperidine-	2-one (RN 931-20-4). PA = 2	19.3 kcal/mol,						
C <sub>6</sub> H <sub>12</sub> NO <sub>3</sub> +					•,					
CH <sub>3</sub> C(OH)NHCH(CH <sub>3</sub>	-		<sub>3</sub> )COOCH <sub>3</sub> . (RN 3619-02-1).							
6H <sub>12</sub> N <sub>2</sub> +										
H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub> N=N	(8.2) IP is onset of phot	(225) (941) oelectron band.	36±0.7 150±3	80ENG	54166-22-2					

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table — Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mo	ion) i kJ/moi	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>6</sub> H <sub>12</sub> N <sub>2</sub> +											
	(7.87) IP from 82LEV/L	(219) IA. See als	(915) 50: 84NEL.	37	156	*EST	5397-67-1				
	≤8.24	(≤210)	(≤878)	20	83	*EST	280-28-4				
	7.197±0.001 IP from 84SMI/H.	187 AG2.	784	21±2	89±7	71RAP/WES	280-57-9				
C <sub>6</sub> H <sub>12</sub> N <sub>2</sub> O <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NCOCON(CH <sub>3</sub> ) <sub>2</sub>	9.02 IP from 82LEV/L	(132) IA, 85RO	(554) Г/BOC.	-76	-316	*EST	1608-14-6				
C <sub>6</sub> H <sub>12</sub> N <sub>2</sub> S +							···				
H3CN NCH3	(7.3) IP is onset of phot	(192) coelectron	(802) band.	23	98	*EST	16597-35-6				
$C_6H_{12}N_2S_2^+$ $(CH_3)_2NC(=S)C(=S)N(=S)$	CH <sub>3</sub> ) <sub>2</sub> ≤7.75 IP from 81HEN/IS	(≤222) SA.	(≤930)	43	182	*EST	35840-78-9				
C <sub>6</sub> H <sub>12</sub> N <sub>3</sub> OP <sup>+</sup>	≤8.89 IP from 82COW/I	(≤190) .AT.	(≤794)	-15	-64	*EST	71771-37-4				
	≤8.19±0.10 IP from 82COW/L	(≤151) .AT.	(≤631)	-38	-159	*EST	53597-70-9				
							****				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	•	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>12</sub> N <sub>3</sub> P <sup>+</sup>	≤8.05±0.10 IP from 82COW	(≤227) //LAT.	(≤952)	42	175	*EST	53597-69-6
C <sub>6</sub> H <sub>12</sub> N <sub>3</sub> PS <sup>+</sup>	T. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.						
N N N	≤8.02±0.10 IP from 82COW	(≤205) ⁄/LAT.	(≤857)	20	83	*EST	56796-56-6
S P N	≤8.43±0.10 IP from 82COW	(≤237) //LAT.	(≤991)	43	178	*EST	
C <sub>6</sub> H <sub>12</sub> N <sub>4</sub> +	(≤8.53) See also: 82COV	(≤244) V/LAT.	(≤1022)	47±0.7	199±3	77PED/RYL	100-97-0
C <sub>6</sub> H <sub>12</sub> O + n-C <sub>5</sub> H <sub>11</sub> CHO	9.67±0.05	164	686	<b>-</b> 59	-247	78TRC	66-25-1
n-C <sub>3</sub> H <sub>7</sub> CH(CH <sub>3</sub> )CHO	(9.70)	(163)	(679)	-61	-257	•EST	123-15-9
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CHCHO	(9.54) IP from 81HOL/	(158) FIN.	(663)	-61	-257	*EST	97-96-1
C <sub>2</sub> H <sub>5</sub> CH(CH <sub>3</sub> )CH <sub>2</sub> CHO	(9.68) IP from 81HOL/	(161) FIN.	(676)	-62	-258	*EST	15877-57-3
neo-C <sub>5</sub> H <sub>11</sub> CHO	9.61±0.01	(158)	(658)	-64	-269	*EST	2987-16-8
n-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.35±0.02	150	624	-66±0.2	-278±1	77PED/RYL	591-78-6
n-C <sub>3</sub> H <sub>7</sub> COC <sub>2</sub> H <sub>5</sub>	9.12±0.02 See also: 81HOL	143 /FIN.	601	-67±0.2	−279±1	77PED/RYL	589-38-8
sec-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.21±0.01 IP from 81HOL/	(144) FIN, 82LEV	(602) /LIA, 84BOU/F	-69 LA.	-287	*EST	565-61-7
iso-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.30±0.01	(145)	(610)	-69	-287	*EST	108-10-1

Table 1. Positive Ion Table - Continued

	Table :	I. Positiv	ve Ion Table	- Contini	uea		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>12</sub> O <sup>+</sup> tert-C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>	9.11±0.02	141	589	-69.3±0.2	-289.8±0.9	77PED/RYL	75-97-8
iso-C <sub>3</sub> H <sub>7</sub> COC <sub>2</sub> H <sub>5</sub>	9.10±0.01	141	592	-68.3±0.2	-286.1±0.9	77PED/RYL	565-69-5
OH .	(9.75) IP from 83RAB/S	(155.5) EL.	(650.7)	-69.3±0.2	-290.0±0.9	85WIB/WAS	108-93-0
С <sub>6</sub> H <sub>12</sub> O <sub>2</sub> + СН <sub>3</sub> (СН <sub>2</sub> ) <sub>4</sub> СООН	≤10.12 IP from 81HOL/F	≤111 TN.	≤463	−122.8±0.4	- -513.6±1.6	77PED/RYL	142-62-1
СН <sub>3</sub> СОО(СН <sub>2</sub> ) <sub>3</sub> СН <sub>3</sub>	10.0	114	479	-116.1±0.1	-485.6±0.5	77PED/RYL	123-86-4
сн <sub>3</sub> соосн(сн <sub>3</sub> )с <sub>2</sub> н <sub>5</sub>	9.90 IP from 82GRE/N	109 ICC.	454	-120	-501	82GRE/MCC	105-46-4
СН <sub>3</sub> (СН <sub>2</sub> ) <sub>3</sub> СООСН <sub>3</sub>	(10.4±0.2)	(127)	(532)	-112.7±0.3	-471.5±1.4	77PED/RYL	624-24-8
tert-C <sub>4</sub> H <sub>9</sub> COOCH <sub>3</sub>	(9.90±0.04)	(111)	(464)	-117±0.2	-491±1	77PED/RYL	598-98-1
	(≤9.29)	(≤178)	(≤746)	-36	-150	*EST	6572-89-0
H <sub>3</sub> C CH <sub>3</sub>	≤9.84 IP from 84ASF/Z	(≤124) YK.	(≤519)	-103	-430	77PED/RYL	695-30-7
CH <sub>3</sub>	(≤9.90) IP from 84ASF/Z	(≤127) YK.	(≤530)	−102±1	-425±4	77PED/RYL	766-20-1
0 0 CH <sub>3</sub> CH <sub>3</sub>	≤9.80 IP from 84ASF/Z	(≤124) YK.	(≤521)	-102	-425	*EST	766-15-4

Table 1. Positive Ion Table - Continued

	Table	I. Positi	ve Ion Table	- Contin	uea		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	cutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>12</sub> O <sub>2</sub> + H <sub>3</sub> C - CH <sub>3</sub> O H <sub>3</sub> C - CH <sub>3</sub>	(8.53)	(156)	(653)	<b>~41</b>	-170	78GRE/LIE	35856-82-7
C <sub>6</sub> H <sub>12</sub> O <sub>2</sub> Si +	≤9.59 IP from 81KHV/Z	(≤39) ZYK.	(≤163)	-182	-762	*EST	61667-33-2
С <sub>6</sub> H <sub>12</sub> O <sub>4</sub> + 0н-о -с <sub>2</sub> н <sub>2</sub>	o (≤10.4)	(≤10)	(≤40)	-230	-963	•EST	
C <sub>6</sub> H <sub>12</sub> S <sub>3</sub> + CH <sub>3</sub> S CH <sub>3</sub> S CH <sub>3</sub>	(8.0) IP is onset of phot	(178) coelectron b	(746) pand.	<b>-</b> 6	-26	*EST	2765-04-0
(H3C)2 S-S(CH3)2	8.0 IP is onset of phot	(151) oelectron b	(633) pand.	-33	-139	•EST	38348-31-1
C <sub>6</sub> H <sub>12</sub> Se <sub>3</sub> +  H Se Se H H <sub>3</sub> C Se CH <sub>3</sub>	(7.7) IP is onset of phot	(211) oelectron b	(882) and (84BOC/AY	33 G).	139	*EST	15732-69-1
C <sub>6</sub> H <sub>12</sub> Si +	≤9.0	(≤182)	(≤760)	-26	-108	*EST	16054-12-9
C <sub>6</sub> H <sub>13</sub> + 1-C <sub>6</sub> H <sub>13</sub>	7.92±0.06 $\Delta_f H$ (Neutral) base	(191) ed on D[C-l	(800) H] = 100.5 kcal/n	8 10l.	33	*EST	2679-29-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(l kcal/mol	ion) I kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>13</sub> + 2-C <sub>6</sub> H <sub>13</sub>	7.0 Δ <sub>f</sub> H(Neutral) ba	(168) sed on D[C	(704) -H] = 99 kcal/	7 mol.	29	*EST	2493-44-9
n-C <sub>3</sub> H <sub>7</sub> C(CH <sub>3</sub> ) <sub>2</sub>	From hydride tra	-			and 76GOR/N	IUN);	21058-26-4
(CH <sub>3</sub> ) <sub>2</sub> CHC(CH <sub>3</sub> ) <sub>2</sub>	From hydride tra Heat of formation				and 76GOR/N	IUN);	24436-98-4
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (CH <sub>3</sub> )C	From proton affii 829. kJ/mol.	152 nity of CH <sub>3</sub>	638 CH = C(CH <sub>3</sub> )	C <sub>2</sub> H <sub>5</sub> . (RN 92	2-61-2). PA =	198.2 kcal/mol,	23088-03-1
₩ H <sup>†</sup>	From proton affir	(167) nity of cyclo	(700) hexane. (RN 1	10-82-7). PA	= (169) kcal/n	nol, (707) kJ/mol.	
C <sub>6</sub> H <sub>13</sub> ClHg <sup>+</sup> n-C <sub>6</sub> H <sub>13</sub> HgCl	≤9.96 IP from 81BAI/C	(≤194) HI2.	(≤811)	-36	~150	*EST	17774-09-3
C <sub>6</sub> H <sub>13</sub> I + n-C <sub>6</sub> H <sub>13</sub> I	9.179	190	794	-22	-92	81HOL/FIN	638-45-9
C <sub>6</sub> H <sub>13</sub> N + n-C <sub>3</sub> H <sub>7</sub> CH = NC <sub>2</sub> H <sub>5</sub>	(9.00) See also: 79AUE/	(203) BOW.	(847)	-5	-21	•EST	1611-12-7
(iso-C3H7)CH = NC2H5	(8.7) IP is onset of pho	(192) toelectron	(805) band.	<b>~</b> 8	-34	*EST	1743-56-2
n-C <sub>3</sub> H <sub>7</sub> N = CHCH <sub>2</sub> CH <sub>3</sub>	(8.55±0.2)	(192)	(802)	~5	-23	*EST	7707-70-2
$n-C_3H_7N = C(CH_3)_2$	(8.31±0.2)	(178)	(742)	<del>-</del> 14±2	-60±8	*EST	22023-64-9
$iso-C_3H_7N = CHCH_2CH_3$	(8.50±0.2)	(186)	(780)	-10	<b>-</b> 40	69BEN/CRU	28916-23-6
$(CH_3)_2NCH = CHC_2H_5$	≤7.57 IP from 81MUL/I	(≤174) PRE2.	(≤730)	0	0	*EST	14548-12-0

Table 1. Positive Ion Table - Continued

		Table 1. Positive foil Table – Continued								
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
$C_6H_{13}N^+$ $(CH_3)_2NCH = C(CH_3)_2$	≤8.15 IP from 81MUL/I	(≤189) PRE2.	(≤791)	1	5	*EST	6906-32-7			
	(≤8.41±0.02)	(≤183)	(≤767)	-10	-44	*EST	111-49-9			
NH₂	(8.62±0.24) See also: 79AUE/	(174) 'BOW.	(727)	-25±0.2	-105±1	79STE	108-91-8			
CH3	7.74 See also: 82ROZ/	(166) HOU, 80SA	(697) AR/WOR, 86SPA	-12±1 /RAD, 86C	−50±4 AU/DIV.	*EST	626-67-5			
н снз	7.76±0.05 See also: 82ROZ/	159 HOU.	664	-20.2±0.2	-84.4±1.0	77PED/RYL	109-05-7			
сн3	7.94±0.05 See also: 82ROZ/	(164) HOU.	(685)	-19±0.4	−81±2	*EST	626-56-2			
СН <sub>3</sub>	8.01±0.05 See also: 82ROZ/	(166) HOU.	(692)	-19±0.4	-81±2	*EST	626-58-4			
C <sub>6</sub> H <sub>13</sub> NO +	(≤9.49)	(≤186)	(≤777)	-33	-139	*EST	6982-39-4			
CH <sub>3</sub> CON(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(8.60±0.02)	(130)	(543)	-69	-287	*EST	685-91-6			

	Table	1. Positiv	e Ion Tab	ole - Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>6</sub> H <sub>13</sub> NO <sub>2</sub> + n-С <sub>4</sub> H <sub>9</sub> CH(NH <sub>2</sub> )СООН	(8.52)	(82)	(343)	-114±2	-479±10	*EST	327-57-1
sec-C <sub>4</sub> H <sub>9</sub> CH(NH <sub>2</sub> )COOH	ł (8.66)	(83)	(349)	-116±2	-487±10	*EST	73-32-5
iso-C <sub>4</sub> H <sub>9</sub> CH(NH <sub>2</sub> )COOH	(8.51)	(80)	(333)	-117±0.7	-488±3	77PED/RYL	61-90-5
$C_6H_{13}N_2^+$ $\left(\begin{array}{c} N \\ N \end{array}\right)$ H <sup>+</sup>	From proton affir PA = 229.0 kcal/i	-		.2.2]octane (RN	- 280-57-9).		
C <sub>6</sub> H <sub>13</sub> O + t-C <sub>4</sub> H <sub>9</sub> C(OH)CH <sub>3</sub>	From proton affin 846. kJ/mol.	94 nity of t-C <sub>4</sub> F	394 1 <sub>9</sub> COCH <sub>3</sub> (1	RN 75-97-8). PA	. = 202.3 kc	al/mol,	
(O) H+	From proton affin	(161) nity of oxepa	(674) ane (RN 592-	-90-5). PA = (20	02) kcal/mol	, (845) kJ/mol.	
C <sub>6</sub> H <sub>13</sub> O <sub>2</sub> + t-C <sub>4</sub> H <sub>9</sub> C(OH)OCH <sub>3</sub>	From proton affin 848.5 kJ/mol.	46 uity of t-C <sub>4</sub> H	191 I <sub>9</sub> COOCH <sub>3</sub>	(RN 598-98-1).	PA = 202.8	kcal/mol,	
C <sub>6</sub> H <sub>13</sub> O <sub>3</sub> P <sup>+</sup> H <sub>3</sub> C O O O O O O O O O O O O O O O O O O O	(8.34±0.1)	(11)	(45)	-182	-760	•EST	7735-82-2
H <sub>3</sub> C 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(8.69±0.1)	(19)	(78)	-182	<b>-</b> 760	*EST	41821-91-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>6</sub> H <sub>13</sub> SSi +  H <sub>5</sub> C <sub>2</sub> \$i CH <sub>3</sub> H <sub>3</sub> C	Δ <sub>f</sub> H(Ion) from a	(162) ppearance p	(679) otential deterr	nination (81GU	JS/VOL).		79126-87-7
C <sub>6</sub> H <sub>14</sub> <sup>+</sup> n-C <sub>6</sub> H <sub>14</sub>	10.13	194 202	810 <i>847</i>	-31.1±0.1	-167.1±0.4 -130.1±0.4	74SCO	110-54-3
•	From charge tran data re-interprete	_				to $IP = 10.2 \text{ eV}$ .	
(CH <sub>3</sub> ) <sub>2</sub> CH(CH <sub>2</sub> ) <sub>2</sub> CH <sub>3</sub>	(10.12)	(191) <i>(201±0.2)</i>	(802) <i>(842±0.9)</i>		-173.8±0.9 -134.6±0.9	74SCO	107-83-5
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CHCH <sub>3</sub>	(10.08)	(191) <i>(201)</i>	(801) <i>(841)</i>		-171.3±0.9 -131.9±0.9	74SCO	96-14-0
(CH <sub>3</sub> ) <sub>2</sub> CHCH(CH <sub>3</sub> ) <sub>2</sub>	(10.02)	(189) <i>(199)</i>	(791) (832)		176.2±0.9 135.1±0.9	74SCO	79-29-8
(CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> CH <sub>3</sub>	(10.06)	(188) <i>(198)</i>	(787) <i>(827)</i>		-183.9±0.9 -143.5±0.9	74SCO	75-83-2
C <sub>6</sub> H <sub>14</sub> Hg <sup>+</sup>							
(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> Hg	(≤8.29)	(≤200)	(≤836)	9±2	36±6	77PED/RYL	628-85-3
(iso-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> Hg	(≤8.03)	(≤195)	(≤815)	10±1	40±6	77PED/RYL	1071-39-2
C <sub>6</sub> H <sub>14</sub> N <sup>+</sup> n-C <sub>3</sub> H <sub>7</sub> CHNHC <sub>2</sub> H <sub>5</sub>	From proton affir (943) kJ/mol.	(135) nity of n-C <sub>3</sub> F	(566) H <sub>7</sub> CH = NC <sub>2</sub> H	5 (RN 1611-12	-7). PA = (22:	5.3) kcal/mol,	
(CH <sub>3</sub> ) <sub>2</sub> NC(CH <sub>3</sub> )CH <sub>2</sub> CH <sub>3</sub>	From proton affir 992 kJ/mol.	129 nity of (CH <sub>3</sub> )	539 ) <sub>2</sub> NC(CH <sub>3</sub> ) =	CHCH <sub>3</sub> (RN 5	2113-79-8). P <i>i</i>	A = 237  kcal/mol,	
(NH <sub>2</sub> ) H <sup>+</sup>	From proton affin 925.5 kJ/mol.	120 hity of cycloh	500 exanamine (R	N 108-91-8). P	A = 221.2 kcal	V/mol,	

Table 1. Positive Ion Table - Continued

	Table 1	1. Posii	tive Ion Tabl	e - Contin	ued ———————		
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> H <sub>14</sub> N <sup>+</sup> (C <sub>6</sub> H <sub>3</sub> )  H <sup>+</sup>	Prom proton affin 961 kJ/mol.	124 uity of 1-m	519 nethylpiperidine	(RN 626-67-5)	. PA = 229.7 kc	al/mol,	
C <sub>6</sub> H <sub>14</sub> NO <sub>2</sub> + L-C <sub>2</sub> H <sub>5</sub> CH(CH <sub>3</sub> )CH(N	NH <sub>3</sub> )COOH  From proton affin PA = 218.9 kcal/r			СН(NH <sub>2</sub> )COO	H (RN 73-32-5).		
L-(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH(N	н3)соон						
	From proton affin PA = 218.1 kcal/r			CH(NH <sub>2</sub> )COO	H (RN 61-90-5).		
C <sub>6</sub> H <sub>14</sub> N <sub>2</sub> + (E)-(C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NN	(8.1) IP is onset of phot	(199) coelectron	(833) a band.	12±1	51±4	80ENG	55204-42-7
(Z)-iso-(C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NN	(≤8.24)	(≤210)	(≤879)	20	84	*EST	23201-84-5
(E)-(iso-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NN	(8.0) IP is onset of phot	(193) oelectron	(808) band.	9±0.5	36±2	80ENG	15464-00-3
N-CH3	6.54 IP from charge tra Reference standar	_					26163-37-1 /THO.
NWCH312	(≤7.97) Reported values o usually significant! change associated	y higher t	han the adiabat	ic value becaus	e of the large geo		53779-90-1
C <sub>6</sub> H <sub>14</sub> N <sub>2</sub> O <sub>2</sub> + L-H <sub>2</sub> N(CH <sub>2</sub> ) <sub>4</sub> CH(NH <sub>2</sub> )	(8.6)	(74)	(308)	-125	-522	*EST	56-87-1
	IP is onset of photo-	oelectron	band (83CAN/	HAM). 			
C <sub>6</sub> H <sub>14</sub> O + n-C <sub>6</sub> H <sub>13</sub> OH	(9.89±0.03) IP from 77ASH/B	(153) UR.	(639)	~75.3±0.3	-315.1±1.4	77PED/RYL	111-27-3

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number					
C <sub>6</sub> H <sub>14</sub> O + n-C <sub>4</sub> H <sub>9</sub> CH(OH)CH <sub>3</sub>	(9.80±0.03) IP from 77ASH/B	(146) BUR.	(612)	-80	-334	84WIB/WAS	626-93-7					
C <sub>2</sub> H <sub>5</sub> CH(OH)C <sub>3</sub> H <sub>7</sub>	(9.63±0.03) IP from 77ASH/B	(143) SUR.	(597)	<b>-</b> 79	-332	*EST	623-37-0					
п-C <sub>5</sub> H <sub>11</sub> OCH <sub>3</sub>	(≤9.67) IP from 80BAC/N	(≤157) 1OU.	(≤656)	-66	-277	*EST	628-80-8					
(СН <sub>3</sub> ) <sub>2</sub> СНСН <sub>2</sub> СН <sub>2</sub> ОСН <sub>3</sub>	3 (≤9.65) IP from 80BAC/M	(≤154) 1OU.	(≤646)	-68	-285	*EST	626-91-5					
(CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> OCH <sub>3</sub>	(≤9.41) IP from 80BAC/N	(≤146) 1OU.	(≤611)	-71	-297	*EST	1118-00-9					
n-C <sub>4</sub> H <sub>9</sub> OC <sub>2</sub> H <sub>5</sub>	9.36 IP from 81HOL/F	146 IN. See als	609 o: 82AUD/BOU	-70 , 80BAC/M	–294 DU.	81HOL∕FIN	628-81-9					
sec-C <sub>4</sub> H <sub>9</sub> OC <sub>2</sub> H <sub>5</sub>	(9.32) IP from 81HOL/F	(140) IN. Sec als	(587) o: 82AUD/BOU	-75	-312	81HOL∕FIN	2679-87-0					
(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> OC <sub>2</sub> H <sub>5</sub>	(9.30) IP from 82AUD/E	(140) 3OU.	(585)	-75	-312	*EST	627-02-1					
tert-C <sub>4</sub> H <sub>9</sub> OC <sub>2</sub> H <sub>5</sub>	(≤9.39±0.015)	(≤139)	(≤582)	(-77)	(-324)	*EST	637-92-3					
(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> O	9.27±0.05 See also: 80BAC/I	144 MOU.	601	−70±0.5	-293±2	77PED/RYL	111-43-3					
(iso-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> O	9.20±0.05 See also: 80BAC/I	136 MOU.	569	-76.2±0.4	-318.8±1.8	77PED/RYL	108-20-3					
C <sub>6</sub> H <sub>14</sub> OS <sup>+</sup> (n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> SO	(≤8.60)	(≤137)	(≤575)	-60.9±0.4	-254.9±1.5	77PED/RYL	4253-91-2					
[(CH <sub>3</sub> ) <sub>2</sub> CH] <sub>2</sub> SO	(≤8.46)	(≤134)	(≤562)	-61	-254	*EST	2211-89-4					
С <sub>6</sub> H <sub>14</sub> O <sub>2</sub> + n-С <sub>4</sub> H <sub>9</sub> CH(CH <sub>3</sub> )ООН	9.25±0.03 IP from 77ASH/B	(152) UR.	(636)	-61	-256	*EST	24254-55-5					
n-C <sub>6</sub> H <sub>13</sub> OOH	(9.47±0.03) IP from 77ASH/B	(162) UR.	(677)	-57	-237	*EST	4312-76-9					
(iso-C <sub>3</sub> H <sub>7</sub> O) <sub>2</sub>	(≤9,16)	(≤147)	(≤614)	-65	-270	74BAT/CHR	16642-57-2					

Table 1. Positive Ion Table - Continued

· · · · · · · · · · · · · · · · · · ·	Table	I. Positi	ive Ion Tabl	e – Contini	1ed		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo		Δ <sub>f</sub> H(Net		Neutral reference	CAS registry
C <sub>6</sub> H <sub>14</sub> O <sub>2</sub> + CH <sub>3</sub> CH(OC <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	≤9.78 IP from 82ZVE/	≤117 VIL.	≤490	-108.4±0.6	-453.5±2.4	77PED/RYL	105-57-7
С <sub>6</sub> Н <sub>14</sub> О <sub>3</sub> <sup>+</sup> сн <sub>3</sub> осн <sub>2</sub> сн <sub>2</sub> осн <sub>2</sub> сг	H <sub>2</sub> OCH <sub>3</sub> ≤9.8 IP from 83BAK//	(≤107) ARM.	( <b>≤</b> 448)	-119	-498	*EST	111-96-6
С <sub>6</sub> H <sub>14</sub> O <sub>3</sub> P <sup>+</sup> H <sub>3</sub> C О О О О О О О О О О О О О О О О О О О	From proton affi (RN 7735-82-2).		-		- oxaphosphorir	nane	
OCH <sub>3</sub> H <sub>3</sub> C O	From proton affii (RN 41821-91-4).				oxaphosphorin	ane	
C <sub>6</sub> H <sub>14</sub> S <sup>+</sup> (n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> S	8.30±0.02	161	676	-29.9±0.2	-125.3±0.8	77PED/RYL	111-47-7
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> S	8.0 IP is onset of pho	(150) toelectron	(630) spectrum. See		-141.9±0.9 OH.	77PED/RYL	625-80-9
C <sub>6</sub> H <sub>14</sub> S <sub>2</sub> <sup>+</sup> (n-C <sub>3</sub> H <sub>7</sub> S) <sub>2</sub>	(≤8.62) Dialkyl disulfides upon ionization; a experimentally ob	adiabatic io	nization poten	_	e from 90° to		629-19-6
(i-C <sub>3</sub> H <sub>7</sub> S) <sub>2</sub>	≤8.51 Dialkyl disulfides upon ionization; a experimentally ob	adiabatic io	nization poten	_			4253-89-8
$C_6H_{14}Si^+$ $(C_2H_5)_2Si = CHCH_3$	Δ <sub>f</sub> H(Ion) from ag	(201) opearance p	(839) potential detern	nination (81GU	S/VOL).		2372-29-4
SilCH <sub>3</sub> 1 <sub>2</sub>	(9.0) IP is onset of pho	(164) toelectron	(686) band. See also:		-182±12	77PED/RYL	1072-54-4

Table 1. Positive Ion Table - Continued

	ve lon labi	COMM			
al Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
(167) S/VOL2.	(699)	-31	-130	81GUS/VOL2	30681-90-4
(170) S/VOL2.	(709)	-30	-127	81GUS/VOL2	2295-13-8
(186)	(777)	−36±1	-149±6	77PED/RYL	97-94-9
(-6)	(-25)	-239±0.5	-1002±2	77PED/RYL	150-46-9
(167) E/BOW.	(700)	-32±0.7	−133±3	•EST	111-26-2
153	640	-27.7±0.1	-116.0±1.4	77PED/RYL	142-84-7
(144)	(602)	-34.4±0.1	-144.0±0.4	77PED/RYL	108-18-9
(≤172) 	(≤722)	-20	-84	*EST	927-62-8
(≤170) ~	(≤711)	-22	-91	*EST	? save as above.
(≤166) •	(≤694)	-21	-86	*EST	918-02-5
		-22.1±0.1 reported; select r tertiary amine	eted value gives	77PED/RYL	121-44-8
(49) notoelectron b	(205) and.	-133±0.7	-558±3	82MIN/SAB	102-71-6
		thylpyridazine ( . kJ/mol.	[RN 26163-37-1]	)	
	. PA = 229.8	. PA = 229.8 kcal/mol, 961	. PA = 229.8 kcal/mol, 961. kJ/mol.	. PA = 229.8 kcal/mol, 961. kJ/mol.	. PA = 229.8 kcal/mol, 961. kJ/mol.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(No kcal/mol	cutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>15</sub> N <sub>2</sub> O <sub>2</sub> + L-H <sub>3</sub> N(CH <sub>2</sub> ) <sub>4</sub> CH(NH <sub>2</sub> )	соон						
	From proton affin PA = 230.3 kcal/r	_		NH <sub>2</sub> )СООН	(RN 56-87-1).		
C <sub>6</sub> H <sub>15</sub> N <sub>3</sub> + .	7.6 IP is onset of phot	185 coelectron b	772 and (86BEC/I	9.4 HUN).	39	69BEN/CRU	108-74-7
C <sub>6</sub> H <sub>15</sub> O <sup>+</sup>					•		
(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> OH	From proton affin 846. kJ/mol.	93 ity of (n-C <sub>3</sub>	391 ,H <sub>7</sub> ) <sub>2</sub> O (RN 1	11-43-3). PA	= 202.3 kcal/m	ool,	
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> OH	From proton affin 862. kJ/mol.	84 ity of (i-C <sub>3</sub> )	350 H <sub>7</sub> ) <sub>2</sub> O (RN 10	08-20-3). PA :	= 206.0 kcal/m	ol,	
C <sub>2</sub> H <sub>5</sub> OH(t-C <sub>4</sub> H <sub>9</sub> )	From proton affin 859. kJ/mol.	83 ity of C <sub>2</sub> H <sub>5</sub>	347 ;O(t-C <sub>4</sub> H <sub>9</sub> ) (F	N 637-92-3).	PA = 205.3 kc	al/mol,	
C <sub>6</sub> H <sub>15</sub> OSi <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> COSi(CH <sub>3</sub> ) <sub>3</sub>	From proton affin 925. kJ/mol.	40 ity of CH <sub>2</sub> :	168 = C(CH <sub>3</sub> )OSi(	(CH <sub>3</sub> ) <sub>3</sub> (RN 1	833-53-0). PA	= 221. kcal/mol,	
С <sub>6</sub> H <sub>15</sub> O <sub>2</sub> + СH <sub>3</sub> OH(CH <sub>2</sub> ) <sub>4</sub> OCH <sub>3</sub>	From proton affin 928. kJ/mol.	46 ity of CH <sub>3</sub> C	194 О(СН <sub>2)4</sub> ОСН	3 (RN 13179-9	96-9). PA = 22	21.8 kcal/mol,	
С <sub>6</sub> H <sub>15</sub> O <sub>3</sub> + (СН <sub>3</sub> ОСН <sub>2</sub> СН <sub>2</sub> ) <sub>2</sub> ОН	From proton affin 918. kJ/mol.	27 ity of CH <sub>3</sub> (	114 OCH <sub>2</sub> CH <sub>2</sub> ) <sub>2</sub> (	OCH <sub>3</sub> (RN 11	1-96-6). PA ==	219.4 kcal/mol,	
C <sub>6</sub> H <sub>15</sub> O <sub>3</sub> P + (C <sub>2</sub> H <sub>5</sub> O) <sub>3</sub> P	(8.4) IP is onset of phot	(0.6) oelectron b	(2.5) and (81ARS/2	-193±1 LVE, 81CHA/	-808±5 FIN, 82LEV/L	80TEL/RAB IA).	122-52-1
C <sub>6</sub> H <sub>15</sub> O <sub>3</sub> PS <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> O) <sub>3</sub> PS	(8.49±0.02)	(-35)	(-148)	-231	-967	•EST	126-68-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	-		Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>6</sub> H <sub>15</sub> O <sub>3</sub> PSe + (C <sub>2</sub> H <sub>5</sub> O) <sub>3</sub> PSe	( < 7.9) IP from 81ZVE/	(<-27) VIL.	(<-113)	-209	-875	*EST	2651-89-0
C <sub>6</sub> H <sub>15</sub> O <sub>4</sub> P <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> O) <sub>3</sub> PO	(9.79) See also: 81CHA	(−58) √FIN.	(-242)	−284±1	-1187±6	77PED/RYL	78-40-0
C <sub>6</sub> H <sub>15</sub> P <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> P	8.15±0.11 See also: 77COW	(134) //GOO, 69B	(561) OG/GRI, 79 <i>2</i>	-54 AUE/BOW.	-225	•EST	554-70-1
C <sub>6</sub> H <sub>15</sub> S + (n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> SH	From proton affi 864. kJ/mol.	129 nity of (n-C <sub>3</sub>	541 ,H <sub>7</sub> ) <sub>2</sub> S (RN 1	11-47-7). PA =	206.5 kcal/mc	ol,	
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> SH	From proton affi 877. kJ/mol.	122 nity of (i-C <sub>3</sub> 1	511 H <sub>7</sub> ) <sub>2</sub> S (RN 62	5-80-9). PA =	209.6 kcal/mo	<b>1,</b>	
C <sub>6</sub> H <sub>15</sub> Sb + (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> Sb	(9.2±0.3)	(224)	(937)	12±3	49±11	82TN270	617-85-6
C <sub>6</sub> H <sub>16</sub> N + n-C <sub>6</sub> H <sub>13</sub> NH <sub>3</sub>	From proton affii 916. kJ/mol.	116 nity of n-C <sub>6</sub> F	484 H <sub>13</sub> NH <sub>2</sub> (RN	111-26-2). PA	= 218.9 kcal/n	nol,	
(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affii 952. kJ/mol.	110 nity of (n-C <sub>3</sub>	462 H <sub>7</sub> ) <sub>2</sub> NH (RN	142-84-7). PA	= 227.5 kcal/r	nol,	
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affir 963. kJ/mol.	101 nity of (i-C <sub>3</sub> F	423 H <sub>7</sub> ) <sub>2</sub> NH (RN	108-18-9). PA	= 230.2 kcal/m	ool,	
(CH <sub>3</sub> ) <sub>2</sub> (tert-C <sub>4</sub> H <sub>9</sub> )NH	From proton affir 971. kJ/mol.	109 nity of (CH <sub>3</sub> )	457 2(tert-C <sub>4</sub> H <sub>9</sub> )	N (RN 918-02-5	). PA = 232.0	) kcal/mol,	
(C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> NH	From proton affin	111 hity of (C <sub>2</sub> H <sub>5</sub>	465 3)3N (RN 121	44-8). PA = 2	32.3 kcal/mol,	972. kJ/mol.	
С <sub>6</sub> H <sub>16</sub> NO <sup>+</sup> NH <sub>3</sub> (CH <sub>2</sub> ) <sub>6</sub> OH	From proton affin (966.5) kJ/mol.	(68) ity of NH <sub>2</sub> ((	(285) CH <sub>2</sub> ) <sub>6</sub> OH (R	N 4048-33-3). P	A = (231.0) k	cal/mol,	

Table 1. Positive Ion Table - Continued

	Table .	L. Positi	ive Ion Tabl	ie - Contii	nuea		·
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(i kcal/mo		Δ <sub>f</sub> H(N kcal/mo	leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>16</sub> N <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> N(CH <sub>3</sub> )	2 7.59±0.3	170	713	-4.7	-19.7	81LOG/TAK	110-18-9
	IP from 81LOG/I			4.,	17.1	01200,11 M	110-10-7
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NN(CH <sub>3</sub> ) <sub>2</sub>							
	≤8.10 Reported values of usually significant change associated	ly higher t	han the adiaba	tic value becau	ise of the large		21849-74-1
(n-C <sub>3</sub> H <sub>7</sub> )(CH <sub>3</sub> )NN(CH <sub>3</sub> ) <sub>2</sub>				_			
	(6.63) IP from charge trastandard: IP (C <sub>6</sub> H)	-		-		*EST eference	60678-65-1
(C <sub>2</sub> H <sub>5</sub> )(CH <sub>3</sub> )NN(CH <sub>3</sub> )(C							
	6.75 IP from charge tra See also: 82LEV/I	_		8 ant determinati	35 ions (86RUM).	*EST	23337-93-1
C <sub>6</sub> H <sub>16</sub> N <sub>3</sub> P <sup>+</sup>							
р-мсн <sub>3</sub> ½	(7.1) IP is onset of phot	(159) oelectron	(666) band (82WOR	-4 VHAR).	-19	*EST	6069-38-1
С <sub>6</sub> H <sub>16</sub> OP <sup>+</sup> (С <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> РОН	From proton affin 931. kJ/mol.	70 ity of (C <sub>2</sub> I	292 H <sub>5</sub> ) <sub>3</sub> PO (RN 5	97-50-2) (85B	OL/HOU). PA	∆ = 222.6 kcal/mol,	
С <sub>6</sub> H <sub>16</sub> O <sub>4</sub> P <sup>+</sup> нор(ос <sub>2</sub> H <sub>5</sub> ) <sub>3</sub>	From proton affin	-135 ity of OP(	-565 OC <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> (RN	178-40-0). PA	= (217) kcal/n	nol, (910) kJ/mol.	
C <sub>6</sub> H <sub>16</sub> P + (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> PH	From proton affin	80 ity of (C <sub>2</sub> I	336 H <sub>5</sub> ) <sub>3</sub> P (RN 554	1-70-1). PA =	(231.7) kcal/m	ol,	
C <sub>6</sub> H <sub>16</sub> Si <sup>+</sup>			****				
(C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> SiH	9.5 See also: 81HOT.	171	716	-48±4	-201±15	77PED/RYL	617-86-7

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Tabl	e - Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>6</sub> H <sub>16</sub> Si <sub>2</sub> +					,		
(H3C)2S:	(8.56±0.07) See also: 81KHV	(125) /ZYK.	(525)	-72±3	-301±14	77PED/RYL	1627-98-1
C <sub>6</sub> H <sub>16</sub> Sn <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> SnH	(≤9.1)	(≤210)	(≤878)	0±2	0±8	80TEL/RAB	997-50-2
i-C <sub>3</sub> H <sub>7</sub> Sn(CH <sub>3</sub> ) <sub>3</sub>	8.2 IP is onset of pho	(178) toelectron	(744) band.	-11±1	<b>−</b> 47±5	77PED/RYL	3531-46-2
C <sub>6</sub> H <sub>17</sub> NSi <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> Si(CH <sub>3</sub> ) <sub>3</sub>	7.61 See also: 81LOG/	(126) TAK.	(527)	-49	-207	*EST	18182-40-6
C <sub>6</sub> H <sub>17</sub> N <sub>2</sub> + NH <sub>3</sub> (CH <sub>2</sub> ) <sub>6</sub> NH <sub>2</sub>	From proton affii 994.4 kJ/mol.	106 nity of NH	442 <sub>2</sub> (CH <sub>2</sub> ) <sub>6</sub> NH <sub>2</sub> (	RN 124-09-4).	PA = 237.7 k	ccal/mol,	
(n-C <sub>3</sub> H <sub>7</sub> )(CH <sub>3</sub> )HNN(CH <sub>3</sub> )	From proton affir PA = 229.1 kcal/s			V(CH <sub>3</sub> ) <sub>2</sub> (RN 6	50678-65-1) (8	4MAU/NEL).	
(CH <sub>3</sub> ) <sub>2</sub> NH(CH <sub>2</sub> ) <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub>	From proton affir PA = 240 kcal/m			(CH <sub>3</sub> ) <sub>2</sub> (RN 1:	10-18-9) re-ev	aluated.	
C <sub>6</sub> H <sub>17</sub> N <sub>3</sub> OP +							
(	From proton affir tetramethyl-2-oxid	37 nity of 1,3,2 de- (RN 77	154 2-Diazaphospho 78-06-5) (85BC	olidine-2-amine DL/HOU). PA	:,N,N',1,3- = 226.9 kcal/	'mol, 949. kJ/mol.	
C <sub>6</sub> H <sub>18</sub> BN <sub>3</sub> + B(N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>3</sub>	7.60	116	487	-59	-246	82HOL/SMI	4375-83-1
C <sub>6</sub> H <sub>18</sub> NSi <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> SiCH <sub>2</sub> NH(CH <sub>3</sub> ) <sub>2</sub>	From proton affin 968. kJ/mol.	85 ity of (CH	354 3) <sub>3</sub> SiCH <sub>2</sub> N(CI	4 <sub>3</sub> ) <sub>2</sub> (RN 1818	2-40-6). PA =	= 231.5 kcal/mol,	

Table 1. Positive Ion Table - Continued

	Table .	L. Posi	tive Ion Table	e - Contin	nued		
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>6</sub> H <sub>18</sub> N <sub>3</sub> OP <sup>+</sup> ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>3</sub> PO	7.82 IP is onset of phot	66 oelectro	277 n band. (82LEV)	-114 /LIA, 82WOR	-477 /HAR). See als	69BEN/CRU so: 82COW/LAT.	630-31-9
C <sub>6</sub> H <sub>18</sub> N <sub>3</sub> P + ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>3</sub> P	6.75 IP is onset of phot See also: 82COW/		(517) n band (82LEV/	-32 LIA, 82WOR/	–134 HAR, 77COW	69BEN/CRU //GOO).	1608-26-0
C <sub>6</sub> H <sub>18</sub> N <sub>3</sub> PS <sup>+</sup> SP[N(CH <sub>3</sub> ) <sub>2</sub> ] <sub>3</sub>	≤8.63±0.10 IP from 82COW/L	(≤162) .AT.	(≤677)	-37	-156	•est	3732-82-9
C <sub>6</sub> H <sub>18</sub> N <sub>3</sub> P <sub>3</sub> +  H <sub>3</sub> C P P CH <sub>3</sub> H <sub>3</sub> C CH <sub>3</sub>	(8.35±0.05)	(64)	(268)	−129±5	-538±23	77PED/RYL	6607-30-3
C <sub>6</sub> H <sub>18</sub> OSi <sub>2</sub> + ((CH <sub>3</sub> ) <sub>3</sub> Si) <sub>2</sub> O	9.64±0.01  IP from 83MOL/P	36 <i>(48)</i> IK, 85SE	153 <i>(202)</i> EE/MOL.	-186±1 -174	-777±6 -728	77PED/RYL	107-46-0
C <sub>6</sub> H <sub>18</sub> Si <sub>2</sub> + (CH <sub>3</sub> ) <sub>6</sub> Si <sub>2</sub>	8.27±0.05  IP from 84SZE/BA	110 <i>122</i> AE, 81SZ	459 <i>513</i> E/KOR. See als	-81±2 -68±2 o: 81KHV/ZY	-339±8 -285±8 'K, 85MOC/W	81WAL	1450-14-2
C <sub>6</sub> H <sub>18</sub> Sn <sub>2</sub> + ((CH <sub>3</sub> ) <sub>3</sub> Sn) <sub>2</sub>	(7.8) IP is onset of photo	(173) pelectron	(726) 1 band (85GRA/	-6±2 BER, 81SZE/	−27±8 KOR). See als	77PED/RYL o: 85MOC/WOR.	661-69-8
C <sub>6</sub> H <sub>18</sub> W <sup>+</sup> (CH <sub>3</sub> ) <sub>6</sub> W	(8.3) IP is onset of photo	(376) Delectron	(1572) a band (82LEV/I	185±8 LIA, 75GAL/V	772±35 VIL).	82PIL/SKI	36133-73-0
C <sub>6</sub> H <sub>19</sub> NSi <sub>2</sub> + ((CH <sub>3</sub> ) <sub>3</sub> Si) <sub>2</sub> NH	≤8.55 IP from 83MOL/P	≤83 IK3.	≤348	-114±1	-477±6	77PED/RYL	999-97-3
C <sub>6</sub> H <sub>19</sub> N <sub>3</sub> P <sup>+</sup> HP(N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>3</sub>	From proton affini 924. kJ/mol.	113 ty of P(N	472 I(CH <sub>3</sub> ) <sub>2</sub> ) <sub>3</sub> (RN	1608-26-0). P <i>t</i>	A = 220.9 kcal	/mol,	
С <sub>6</sub> H <sub>19</sub> OSi <sub>2</sub> <sup>+</sup> ((СН <sub>3</sub> ) <sub>3</sub> Si) <sub>2</sub> ОН	From proton affini (849) kJ/mol.	(-23) ty of ((C	(-96) H <sub>3</sub> ) <sub>3</sub> Si) <sub>2</sub> O (RN	107-46-0). PA	A = (203) kcal/	mol,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

Table 1. Positive Ion Table - Continued

		21 2 001111	e Iuli Table	- Contini			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Neu kcal/mol		Neutral reference	CAS registry number
C <sub>6</sub> M <sub>0</sub> O <sub>6</sub> + M <sub>0</sub> (CO) <sub>6</sub>	8.227±0.011 See also: 82HUB/	–28 <i>–29</i> LIC.	-118 - <i>121</i>	-218 -219	-912 -915	77ROS/DRA	13939-06-5
C <sub>6</sub> N <sub>4</sub> + (NC) <sub>2</sub> CC(CN) <sub>2</sub>	11.77±0.01	440	1842	169±1	706±6	77PED/RYL	670-54-2
C <sub>6</sub> O <sub>6</sub> V <sup>+</sup> V(CO) <sub>6</sub>	7.52	-31	-128	-204±7	-854±29	67BID/MCI	20644-87-5
C <sub>6</sub> O <sub>6</sub> W <sup>+</sup> W(CO) <sub>6</sub>	8.20 IP from 82HUB/L	-23 .IC, 77ROS/	-96 DRA.	-212±1	-887±4	84ALT/CON2	14040-11-0
C <sub>7</sub> CIF <sub>5</sub> O + CCI	(9.8) IP is onset of phot		(–13) and (81MEE/\	-229 WAH).	-959	*EST	2251-50-5
C <sub>7</sub> F <sub>3</sub> MnO <sub>6</sub> + CF <sub>3</sub> COMn(CO) <sub>5</sub>	(8.5) IP is onset of phot		(-688) and.	-360±1	-1508±6	82CON/ZAF	14099-62-8
C <sub>7</sub> F <sub>8</sub> +  CF <sub>3</sub> F F F	(9.9)	(-56)	(-232)	−284±2	-1187±8	77PED/RYL	434-64-0
C <sub>7</sub> HF <sub>5</sub> O <sub>2</sub> + O C OH F F F	(9.2) IP is onset of phot		(-260) and (81MEE/V		-1148±4	77PED/RYL	602-94-8
C <sub>7</sub> H <sub>3</sub> F <sub>5</sub> <sup>+</sup> F  F  F  F	(9.4) Value of IP from c	(15) harge trans	(64) fer equilibrium	-201.5±0.4 a constant dete		77PED/RYL 9.63 eV.	771-56-2

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>7</sub> H <sub>4</sub> FN <sup>+</sup>	(9.78)	(231)	(965)	5	21	*EST	394-47-8				
ÇN .	(9.79)	(231)	(966)	5	21	*EST	403-54-3				
F CN	(9.74)	(229)	(957)	4	17	*EST	1194-02-1				
C <sub>7</sub> H <sub>4</sub> F <sub>4</sub> <sup>+</sup>	9.98 IP from 82CAB/C	(41) COW.	(171)	-189±0.3	-792±1	*EST	402-44-8				
C <sub>7</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> +	(10.29±0.1)	(286)	(1197)	49	204	*EST	619-24-9				
O <sub>2</sub> N CN	(10.23±0.1)	(284)	(1189)	48	202	*EST	619-72-7				
C <sub>7</sub> H <sub>4</sub> S <sub>3</sub> +	(7.9) IP is onset of phot	(242) oelectron b	(1013) and.	60±1	251±5	72GEI/RAU	3354-42-5				
O_s>s	(8.14)	(246)	(1027)	57.8±0.4	242.0±1.7	77PED/RYL	934-36-1				

Table 1. Positive Ion Table - Continued

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ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>5</sub> BrO <sup>+</sup>	(9.65) IP from 79MCL/I	(211) FRA. See als	(882) so: 84GAN/LIV.	-12	<b>-</b> 49	79MCL/TRA	618-32-6
Br—CH	≤9.22 IP from 85GAL/C	(≤209) GER.	(≤874)	-4	-16	*EST	1122-91-4
C <sub>7</sub> H <sub>5</sub> BrO <sub>2</sub> <sup>+</sup>	(9.72±0.2)	(155)	(648)	-69±1	-290±5	77PED/RYL	586-76-5
C <sub>7</sub> H <sub>5</sub> ClO <sup>+</sup>	9.59±0.02 IP from 85GAL/G	(205) ER, 77ROS	(856) /DRA.	-16	-69	*EST	104-88-1
Coci	9.54 IP is onset of photo See also: 80GOF/Y			−25±1 7,81MEE/W	-103±4 /AH).	75MOS/PRI	98-88-4
C <sub>7</sub> H <sub>5</sub> Cl <sub>2</sub> <sup>+</sup>	Δ <sub>f</sub> H(Ion) from chl		(824) er equilibrium co	onstant dete	rminations (85S)	HA/SHA).	
C <sub>7</sub> H <sub>5</sub> Cl <sub>3</sub> <sup>+</sup> CCl <sub>3</sub>	≤9.60 IP from 81ZVE/EF		(≤915)	-3	-11	*EST	98-07-7

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued							
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>5</sub> FO <sup>+</sup>							
© c F	9.78 IP from 79MCL/I	(153) TRA, 84GA	(639) .N/LIV.	<b>-7</b> 3	-305	*EST	455-32-3
F—СНО	≤9.60 IP from 85GAL/C	(≤167) SER.	(≤700)	<b>-54</b>	<b>-</b> 226 -	*EST	459-57-4
C <sub>7</sub> H <sub>5</sub> FO <sub>2</sub> +				The state of the s			
-соон	(9.91±0.2)	(111)	(466)	-117	<b>~</b> 490	*EST	455-38-9
F СООН	(9.91±0.2)	(111)	(461)	<b>−118±1</b>	−495±3	77PED/RYL	456-22-4
C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> +							
© CF3	9.685±0.004 See also: 81BER/I	80.1 3OM.	335.4	-143.2±0.2	2 -599.0±0.9	77PED/RYL	98-08-8
C <sub>7</sub> H <sub>5</sub> N <sup>+</sup>							
C <sub>7</sub> H <sub>5</sub> N <sup>+</sup>	(9.4) IP is onset of phot	(289) oelectron t	(1208) pand.	72±2	301±7	*EST	931-54-4
O_cH	9.62 See also: 83KLA/F	274 KOV, 81KI	1147 M/KAT.	52	219	82CHU/NGU	100-47-0

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H({ m Ic}$	\n)	A LIMI-	uten1)	Naut-of	CAS recist-
Neutral	eV	Δ <sub>f</sub> H(10 kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>5</sub> NO <sup>+</sup> C≡NO	(8.96±0.02)	(275)	(1148)	68	283	*EST	873-67-6
N = C = 0	(8.8) IP is onset of photon	(206) toelectron b	(862) and.	3	13	*EST	103-71-9
C <sub>7</sub> H <sub>5</sub> NO <sub>3</sub> +				······································			
о2и—О—сно	10.27±0.01 See also: 85GAL/	(249) GER.	(1043)	12	52	*EST	555-16-8
C <sub>7</sub> H <sub>5</sub> NO <sub>4</sub> <sup>+</sup> COOH  NO <sub>2</sub>	(10.31±0.2)	(143)	(600)	-94.3±0.3	−394.7±1.3	77PED/RYL	121-92-6
O <sub>2</sub> N COOH	10.18±0.2	141	589	-93.7±0.4	-392.2±1.5	77PED/RYL	62-23-7
C <sub>7</sub> H <sub>5</sub> N <sub>2</sub> <sup>+</sup>	8.11±0.01 IP from 84FUK/Y	(238) OS.	(995)	51	213	*EST	
C <sub>7</sub> H <sub>5</sub> N <sub>3</sub> O <sub>6</sub> <sup>+</sup> CH <sub>3</sub> O <sub>2</sub> N NO <sub>2</sub>	(10.59±0.04)	(252)	(1054)	8±0.5	32±2	77PEL	118-96-7

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Table 1. Positive Ion Table - Continued

Ionization potential eV From appearance	Δ <sub>f</sub> H(Iokcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
From appearance	168±1		Municipal Control of C		<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	
	potential n	705±6 neasurements	(79MCL/TRA	82BUR/HOL	.2. See also: 85TAJ/	2652-65-5 TOB.
(8.29)	(275)	(1150)	84±2 -	350±10	*EST	27041-32-3
(≤8.82)	(≤292)	(≤1223)	89±1	372±4	73BIL/CHO	4646-69-9
(8.5) IP from 81GRU.	(232)	(972)	36	152	*EST	30216-44-5
				erminations (8	SSHA/SHA);	
(8.5) IP is onset of phot	(166) oelectron b	(694) and (82LOU/	-30 VAN).	-126	*EST	
		(≤769)	-29	-122	*EST	
	(8.29)  (8.5) IP from 81GRU.  Δ <sub>f</sub> H(Ion) from ch Δ <sub>f</sub> H(C <sub>6</sub> H <sub>5</sub> CCl <sub>2</sub> H  (8.5) IP is onset of phot	(8.29) (275)  (8.29) ( $\leq$ 292)  (8.5) (232)  IP from 81GRU.  (209) $\Delta_f H(\text{Ion})$ from chloride trans $\Delta_f H(C_6 H_5 C C I_2 H)$ estimated  (8.5) (166)  IP is onset of photoelectron by	(8.29) (275) (1150)  (\$8.82) (\$\(\perceq\$292) (\$\(\perceq\$1223)\$  (8.5) (232) (972)  IP from 81GRU.  (209) (873) $\Delta_f H(\text{Ion})$ from chloride transfer equilibrium $\Delta_f H(\text{C}_6 \text{H}_5 \text{CCl}_2 \text{H})$ estimated as 3 kcal/mol.  (8.5) (166) (694)  IP is onset of photoelectron band (82LOU/Mol.)  (\$\(\perceq\$9.23) (\$\(\perceq\$184) (\$\(\perceq\$769)\$)	(8.29) (275) (1150) 84±2  (58.82) (5292) (51223) 89±1  (8.5) (232) (972) 36  IP from 81GRU.  (209) (873)  Δ <sub>Γ</sub> H(Ion) from chloride transfer equilibrium constant detector tra	(8.29) (275) (1150) $84\pm2$ $350\pm10$	(\$8.82) (\$292) (\$1223) 89±1 372±4 73BIL/CHO  (8.5) (232) (972) 36 152 *EST  IP from 81GRU.  (209) (873) Δ <sub>f</sub> H(Ion) from chloride transfer equilibrium constant determinations (85SHA/SHA); Δ <sub>f</sub> H(C <sub>6</sub> H <sub>5</sub> CCl <sub>2</sub> H) estimated as 3 kcal/mol, 13 kJ/mol.  (8.5) (166) (694) -30 -126 *EST  IP is onset of photoelectron band (82LOU/VAN).

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>7</sub> H <sub>6</sub> CINS + NH <sub>2</sub> C S	8.8 IP from 81GRU.	(226)	(948)	24	99	*EST	15717-17-6			
C <sub>7</sub> H <sub>6</sub> CIO + CHOH	From proton affin 838. kJ/mol.	149 hity of 4-CIO	623 C <sub>6</sub> H <sub>4</sub> CHO (RI	V 104-88-1). P.	A = 200.2 kca	l/mol,				
C7H6F+	Δ <sub>f</sub> H(Ion) from ch Δ <sub>f</sub> H(o-C <sub>6</sub> H <sub>4</sub> FCH		_				40880-01-1			
CH <sub>2</sub> ·	Δ <sub>f</sub> H(Ion) from ch Δ <sub>f</sub> H(m-C <sub>6</sub> H <sub>4</sub> FCF						2599-73-7			
F CH <sub>2</sub>	Δ <sub>f</sub> H(Ion) from ch Δ <sub>f</sub> H(ο-C <sub>6</sub> H <sub>4</sub> FCH						2194-09-4			
C <sub>7</sub> H <sub>6</sub> FO <sup>+</sup>										
· CHOH	From proton affin 822. kJ/mol.	113 ity of 3-FC	472 <sub>5</sub> H <sub>4</sub> CHO (RN	456-48-4). PA	. = 196.4 kcal/	mol,				
<b>Б</b> СНОН	From proton affin	110 ity of 4-FC <sub>6</sub>	462 <sub>5</sub> H <sub>4</sub> CHO (RN	459-57-4). PA	. = 199.2 kcal/	moi,				

	Table	1. Positi	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>7</sub> H <sub>6</sub> FeO <sub>3</sub> + co	8.04 IP is onset of pho	100 toelectron	417 band. See also:	-86±2 82GRE/KEL.	-359±9	82PIL/SKI	12078-32-9
C <sub>7</sub> H <sub>6</sub> INS <sup>+</sup> NH <sub>2</sub> I C S	8.5 IP from 81GRU.	(246)	(1030)	50	210	*EST	81568-85-6
C <sub>7</sub> H <sub>6</sub> N <sup>+</sup>	From proton affin	222 ity of C <sub>6</sub> H	929 5CN (RN 100-4	7-0). PA = 1	95.9 kcal/mol, 8	320. kJ/mol.	
N = CH	From proton affin PA = 207 kcal/mo			4-4). (86MAL	J/KAR).		
C <sub>7</sub> H <sub>6</sub> N <sub>2</sub> + N+2	(8.61±0.05)	(252)	(1053)	53	222	*EST	2237-30-1
CN NH <sub>2</sub>	(8.17) IP is onset of phot	(240) oelectron t	(1004) pand (81MOD/)	52 DIS).	216	*EST	873-74-5
All Andrews and the second	(8.35)	(253)	(1060)	60.8±1.1	254.2±4.6	85FAO/AKA	271-44-3
V OTH	(8.0) IP is onset of phot	(228) oelectron b	(957) pand.	44±2	185±10	*EST	51-17-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ <sub>f</sub> H(Io	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>7</sub> H <sub>6</sub> N <sub>4</sub> <sup>+</sup>	(8.8) IP is onset of pho	(283) stoclectron b	(1182) pand (84GLE/SP	80 A2).	333	*EST	6499-38-3
C-H-O+							
С <sub>7</sub> H <sub>6</sub> O +	9.49±0.02 IP from 79MCL/7	210 FRA. See al:	879 so: 83KLA/KOV	-9±0.5 7, 85GAL/GI	−37±2 ER.	77PED/RYL	100-52-7
	8.90±0.02	215	903	10±0.7	44±3	77PED/RYL	539-80-0
C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> +		÷		<del></del>			
ОН	(9.86±0.02)	(191)	(797)	-36.8±0.2	-154.0±0.9	77PED/RYL	533-75-5
<u>С</u> соон	(9.47) IP from onset of p	(148) photoelectro	(620) on band (83KLA		−294.1±1.6 also: 81MEE/W	77PED/RYL AH.	65-85-0
но	(9.32±0.02)	(159)	(666)	-56±2	-233±8	•EST	
CH <sub>3</sub>	9.78±0.02	188	789	-37.1±2.0	−155±9	*EST	553-97-9
	(8.0) IP is onset of pho	(150) toelectron b	(629) and.	−34±0.7	−143±3	77PED/RYL	274-09-9

Table 1. Positive Ion Table - Continued

ION	Ionigation patential	A 77/1.	>	A TVNI		N	CAS registry
Neutral	Ionization potential eV	•	kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> +							
	(9.64) IP from 85GLE/	(232) JAH.	(971)	10	41	*EST	53735-22-1
O.	(8.4) IP is onset of pho	(175) otoelectron b	(731) pand.	-19	<b>-</b> 79	*EST	17994-26-2
C <sub>7</sub> H <sub>7</sub> +			• ,		•		
	6.24±0.01	203 <i>208</i>	849 <i>872</i>	59	247	82MCM/GOL	3551-27-7
,¢`	$\Delta_f H$ (Ion) from a Heat of formatio 65±2 kcal/mol, 27	n of radical o	otential meas lerived from	urements (83B0 Δ <sub>f</sub> H(C <sub>7</sub> H <sub>7</sub> <sup>+</sup> )-l	OM/DAN, 831 P; 82MCM/C	BOM/DAN2); iOL cite	
11, 10, 10, 10, 10, 10, 10, 10, 10, 10,	7.20±0.02	215	899	49	204	81TSA	2154-56-5
N CH2•	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from c	219 hloride trans	<i>917</i> fer equilibriu	53 m constants (81	<i>223</i> SEN/KEB) is	in agreement.	
C <sub>7</sub> H <sub>7</sub> Br <sup>+</sup>		······································	· · · · · · · · · · · · · · · · · · ·				
CH <sub>2</sub> B <sub>r</sub>	9.0 IP is onset of pho	(224) stoelectron b	(935) and.	16±0.5	67±2	76ASH	100-39-0
CH <sub>3</sub>	8.58±0.1 See also: 85BAI/f	(213) MIS.	(890)	15	62	*EST	95-46-5
CH3 Br	8.79±0.02	(217)	(909)	15	61	*EST	591-17-3
H <sub>3</sub> C Br	8.67±0.01 IP from 82LEV/L	(217) .IA, 78LIA/ <i>P</i>	(908) AUS, 77ROS/	17 DRA. See also:	71 85BAI/MIS.	*EST	106-38-7

Table 1. Positive Ion Table - Continued

	Table	I. POSILIV	e ion Table -	- Contin	uea		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>7</sub> BrO <sup>+</sup>						<del> </del>	
H <sub>3</sub> CO Br	(8.11)	(177)	(739)	-10	-43	*EST	104-92-7
C <sub>7</sub> H <sub>7</sub> BrS <sup>+</sup>		·		· · · · · · · · · · · · · · · · · · ·			
H <sub>3</sub> CS—Br	(7.5) IP is onset of photon	(201) toelectron b	(843) pand (81BAK/AR	28 M).	119	*EST	104-95-0
C <sub>7</sub> H <sub>7</sub> Cl <sup>+</sup>						,	
СН2СІ	9.14±0.01 See also: 81ZVE/I	215 ERM, 81KI	899 M/KAT.	4±0.7	17±3	76ASH	<del>25168-05-2</del>
CH3	(8.83±0.02) See also: 85BAI/N	(208) 11S.	(871)	4	18	*EST	95-49-8
H3C CI	(8.83±0.02)	(208)	(870)	4	18	*EST	108-41-8
H <sub>3</sub> C CI	8.69±0.02 See also: 85BAI/M	(205) IIS.	(856)	4	18	•EST	106-43-4
CI	≤8.77 IP from 83HOU/R		(≤1071)	54	225	*EST	2294-41-9
C <sub>7</sub> H <sub>7</sub> ClHg <sup>+</sup>							•
Н3С————Н9СІ	(8.7) IP is onset of photo	(223) Delectron ba	(931) and (81FUR/PIA)	22 ).	92	*EST	539-43-5

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>7</sub> H <sub>7</sub> CIO <sup>+</sup>	(8.51) IP from 83RUS/FI	(166) RE.	(697)	-30	-124	83RUS/FRE	873-63-2				
СI СН <sub>2</sub> ОН	(8.58) IP from 83RUS/FI	(167) RE.	(698)	-31	-130	83RUS/FRE	873-76-7				
осн3	(8.42) IP from 83RUS/FI	(169) RE.	(707)	-25	-105	83RUS/FRE	766-51-8				
сі Оснз	(7.79) IP from 83RUS/FI	(153) RE.	(641)	-26	-111	83RUS/FRE	623-12-1				
С7H7F <sup>+</sup>	8.91±0.01 See also: 78LIA/A	(170) US.	(711)	-36	-149	*EST	95-52-3				
CH3	8.91±0.01	(170)	(710)	-36	-150	*EST	352-70-5				
H <sub>3</sub> C F	8.79±0.01 See also: 78LIA/A	167 US.	700	-35.2±0.3	−147.5±1.2	77PED/RYL	352-32-9				
С7H7FO <sup>+</sup> F —осн <sub>3</sub>	8.41 IP from 85OIK/AE	(130) BE.	(544)	-64	-267	*EST	456-49-5				

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry			
C <sub>7</sub> H <sub>7</sub> F <sub>3</sub> N <sup>+</sup> (C <sub>7</sub> H <sub>7</sub> F <sub>3</sub> N <sup>+</sup> (C <sub>7</sub> H <sub>7</sub> F <sub>3</sub> N <sup>+</sup> (H <sup>*</sup>	From proton affin 854. kJ/mol.	19 ity of 3-Cl	81 F <sub>3</sub> C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> (F	LN 98-16-8). 1	PA = 204.2 kca	l/mol,				
C <sub>7</sub> H <sub>7</sub> I +										
CH2I	(8.6)	(223)	(933)	25±1	103±4	76ASH	620-05-3			
CH <sub>3</sub>	(8.62±0.01) See also: 85BAI/N	(231) IIS.	(965)	32±1	133±6	77PED/RYL	615-37-2			
CH3	(8.61±0.03)	(231)	(965)	32±1	134±6	77PED/RYL	625-95-6			
H <sub>3</sub> C	(8.50±0.01) See also: 85BAI/M	(225) IIS.	(942)	29±1	122±6	77ROS/DRA	624-31-7			
C <sub>7</sub> H <sub>7</sub> N <sup>+</sup> N  HC  CH <sub>2</sub>	(8.6) IP is onset of photo	(246) oelectron	(1030) band (81MOD/	48 DIS2).	200	*EST	100-69-6			
NO −CH	(8.9) IP is onset of photo	(254) Delectron	(1061) band (81MOD/	48 DIS2).	202	*EST	100-43-6			
	(≤9.11) IP from 79AUE/B	(≤270) OW.	(≤1129)	60	250	*EST	56911-25-2			

Table 1. Positive Ion Table - Continued

	Table	1. Pusiti	ve foli Table	- Contin	ucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>7</sub> N <sup>+</sup>		······································					
	(≤9.37) IP from 79AUE I ions = 268 kcal/m					*EST ridine	56911-27-4
C <sub>7</sub> H <sub>7</sub> NO <sup>+</sup>						<u> </u>	
NH <sub>2</sub>	(9.43±0.02)	(227)	(949)	9.4±0.6	39.5±2.5	77PED/RYL	6264-93-3
O C NH2	9.45	194	811	-24±0.2	-101±1	82TOR/SAB2	55-21-0
H3C C=0	(8.9) IP is onset of pho	(200) toelectron b	(838) pand (81MOD/D	-5 IS2).	-21	*EST	1122-62-9
O=C_CHZ	(9.1) IP is onset of pho	(204) toelectron b	(852) pand (81MOD/D	-6 IS2).	26	*EST	
N	(9.3) IP is onset of pho	(208) toelectron b	(871) eand (81MOD/D	-6 IS2).	-26	*EST	1122-54-9
H³C	(8.79±0.1)	(216)	(903)	13.2±1	55±4	•EST	623-11-0
C <sub>7</sub> H <sub>7</sub> NOS <sup>+</sup>	W-1			.,,		····	<del></del>
C <sub>7</sub> H <sub>7</sub> NOS <sup>+</sup> NSO  CH <sub>3</sub>	(8.75) IP is onset of phot	(187) toelectron b	(782) and (82LOU/V <i>A</i>	-15 AN).	-62	*EST	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(Io	n)	Δ <sub>f</sub> H(Ne	usteal)	Neutral	CAS registry
Neutral	eV		kJ/mol	-	kJ/mol	reference	number
C <sub>7</sub> H <sub>7</sub> NOS <sup>+</sup> N S O  CH <sub>3</sub>	(≤8.84) IP from 82LOU/\	(≤190) VAN.	(≤795)	-14	-58	*EST	
C <sub>7</sub> H <sub>7</sub> NO <sub>2</sub> +							
COOH NH2	(7.6) IP is onset of pho	(104) toelectron b	(435) and (81MEE/W	-71±0.5 'AH).	-298±2	77NAB/SAB	118-92-3
COOH NH <sub>2</sub>	(7.8) IP is onset of photo	(111) toelectron b	(463) and (81MEE/W	-69±1 'AH).	−289±4	77NAB/SAB	99-05-8
H <sub>2</sub> N C00H	(7.8) IP is onset of phot	(110) coelectron b	(458) and (81MEE/W	-70±1 AH). See als	-294±4 o: 84TOB/TAJ.	77NAB/SAB	150-13-0
CH <sub>3</sub>	9.45±0.04 IP from 82LEV/L	231 IA, 82BAL/	965 CAR. See also:	13 73GOL/KO	53 R.	77PED/RYL	88-72-2
CH <sub>3</sub>	(9.48±0.02)	(226)	(946)	7	31	77PED/RYL	99-08-1
H <sub>3.</sub> C. NO <sub>2</sub>	(9.4) IP is onset of photo	(224) oelectron ba	(938) and.	7±1	31±4	77PED/RYL	99-99-0
C <sub>7</sub> H <sub>7</sub> NO <sub>3</sub> <sup>+</sup> och <sub>3</sub> NO <sub>2</sub>	(8.8) IP is onset of photo	(186) pelectron ba	(779) and.	-17	-70	*EST	91-23-6

Table 1. Positive Ion Table - Continued

	Table 1. Positive fon Table — Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		$\Delta_{\mathbf{f}}H$ (Nekcal/mol		Neutral reference	CAS registry number			
С <sub>7</sub> H <sub>7</sub> NO <sub>3</sub> + осн <sub>3</sub> осн <sub>3</sub>	(8.7) IP is onset of pho	(179) toelectron b	(749) pand.	-22	-90	*EST	555-03-3			
02N OCH3	(8.79)	(182)	(760)	-21	-88	*EST	100-17-4			
C <sub>7</sub> H <sub>7</sub> NS <sup>+</sup>	(8.8) IP from 81GRU.	(234)	(980)	31.3±0.3	131.0±1.3	82TUR/SAB2	2227-79-4			
C <sub>7</sub> H <sub>7</sub> N <sub>2</sub> <sup>+</sup> (NH <sub>2</sub> CN) H <sup>+</sup>	From proton affin 840. kJ/mol.	218 Lity of 3-cyar	912 nobenzenamine (	RN 2237-30	-1). PA = 200.7	ccal/mol,				
OT H	From proton affin 914 kJ/mol.	208 lity of indazo	870 ole (RN 271-44-3	) (84FLA/M	(AQ). PA = 218	kcal/mol,				
OT ST.	From proton affin PA = 227 kcal/mo	-	-	·17-2) (83C <i>&amp;</i>	AT/ELG, 84FLA/	MAQ).				
C <sub>7</sub> H <sub>7</sub> N <sub>2</sub> O +	(7.28) IP from 77NUY/M	(178) MES.	(746)	11	44	*EST	17333-79-8			

Table 1. Positive Ion Table - Continued

	Table:	1. Positive Ion Table	- Continued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
С <sub>7</sub> H <sub>7</sub> O <sup>+</sup>	From proton affin 838. kJ/mol.	157 655 ity of benzaldehyde (RN	100-52-7). PA = 200.2 kcal/	mol,	
ĆH <sup>2</sup>	From appearance	176 735 potential determinations	(83RUS/FRE).		65108-16-9
H0 CH <sub>2</sub>	From appearance	174 728 potential determinations	(83RUS/FRE).		65108-08-9
HO CH2	proton affinity of		ninations (83RUS/FRE). Va diene-1-one is (153) kcal/mo , (929) kJ/mol.		29180-18-5
. О ССН <sub>3</sub>	(8.32) IP from 77NUY/N	(202) (845) IES.	10 42	*EST	2396-03-4
ОН	<del>-</del>	-	ne-1-one. PA = 219 kcal/mo otential determinations (83I		
С <sub>7</sub> H <sub>7</sub> O <sub>2</sub> +	From proton affini 829. kJ/mol.	97 407 ity of benzoic acid (RN 65	-85-0). PA = 198.2 kcal/mo	1,	

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Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>8</sub> + HC=C(CH <sub>2</sub> ) <sub>3</sub> C=CH	(9.85) IP from 78TRA/N	(322) ACL.	(1346)	94.7	396	58BEN/BUS	2396-63-6
	8.29  IP from 78TRA/N	235 <i>240</i> 1CL.	982 1004	43.7±0.2 48.7	182.8±1 203.8	77PED/RYL	544-25-2
—сн <sub>з</sub>	8.82±0.01 See also: 82SEL/F	215 <i>221</i> HEL, 81KIN	901 <i>924</i> M/KAT, 78LIA	12.0±0.1 <i>17.5</i> /AUS, 84HOW	50.1±0.3 <i>73.3</i> //GON.	77PED/RYL	108-88-3
	7.9 IP from 8SBAL/H	223 IAS. See als	934 so: 82BUR/TEI	41 R, 82BAR.	172	85BAL/HAS	20679-59-8
	(8.6) IP from 82BAR.	(233)	(975)	35±3	146±13	82BAR	3217-87-6
4	8.35 IP from 78TRA/M	250 ICL. See al	1046 so: 83HOU/RC	57±1 DN, 82BIE/ASI	240±4 B, 85OHN/ISH.	80ROG/CHO	121-46-0
	8.8 IP from 85BAL/H	288 (AS.	1206	85	357	85BAL/HAS	67254-49-3
4	(7.8) IP is onset of phot	(260) oelectron b	(1086) eand.	80±1	333±4	80ROG/CHO	278-06-8

	Table :	1. Positiv	e Ion Table	- Contin	ued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>8</sub> +							
	(8.14)	(250)	(1045)	62	260	*EST	765-46-8
C <sub>7</sub> H <sub>8</sub> Br <sup>+</sup>							
( CH3 ) H.	From proton affi PA = 187.2 kcal/	193 nity of 1,2-C mol, 783. kJ	809 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> )Br (R I/mol.	N 95-46-5) (	(82MAS/BOH).		
Br		191	801				
(CH3)H4	From proton affi PA = 188.8 kcal/	nity of 1,3-0	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> )Br (R	N 591-17-3)	(82MAS/BOH).		
(H <sub>3</sub> C ) H	From proton affi PA = 187.2 kcal	196 nity of 1,4-0 /mol, 783. k	818 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> )Br (F J/mol.	N 106-38-7	) (82MAS/BOH)		
C <sub>7</sub> H <sub>8</sub> Cl <sup>+</sup>							
( CI CH3 ) H	From proton affi PA = 184.3 kcal	186 inity of 1,2-0 /mol, 771. k	777 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> )Cl (F J/mol.	N 95-49-8)	(82MAS/BOH).		
Çı					•		
(CH3)	From proton aff PA = 188.9 kcal	181 inity of 1,3- i/mol, 790. k	758 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> )Cl (F J/mol.	RN 108-41-8	) (82MAS/BOH)		
/ CCI )	1+	189	792				
( H3C		inity of 1,4-	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> )Cl (I	RN 106-43-4	) (82MAS/BOH)		
C <sub>7</sub> H <sub>8</sub> Cl <sub>2</sub> Si <sup>+</sup>							
Si-cH3	(8.97) IP from 84VES/	(132) HAR.	(551)	-75	-314	*EST	149-74-6

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Table	e - Continued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>8</sub> F <sup>+</sup> F CH <sub>3</sub>	From proton affir PA = 187.0 kcal/i		95-52-3) (82MAS/BOH).		
H <sub>2</sub> CH <sub>3</sub>	From proton affir PA = 189.5 kcal/i		352-70-5) (82MAS/BOH).		
F CH3	From proton affir PA = 180.9 kcal/i		- 352-32-9) (82MAS/BOH).		
С <sub>7</sub> H <sub>8</sub> F <sub>2</sub> Si <sup>+</sup> Б- Г- Сн <sub>3</sub>	(8.97) IP from 84VES/H	(29) (122) IAR.	-178 -743	*EST	328-57-4
C <sub>7</sub> H <sub>8</sub> I <sup>+</sup>	From proton affir PA = 188.4 kcal/i	209 875 nity of 2-IC <sub>6</sub> H <sub>4</sub> CH <sub>3</sub> (RN 6 mol, 788. kJ/mol.	615-37-2) (82MAS/BOH).		
C <sub>7</sub> H <sub>8</sub> N <sup>+</sup> CH=CH <sub>2</sub>	From proton affir (934) kJ/mol.	(191) (798) nity of 4-vinylpyridine (RN	7 100-43-6). PA = (223.2) I	kcal/mol,	
H DI	<del>-</del>	(202) (846) nity of 3,4-cyclobutenopyri I/mol, (945) kJ/mol.	dine (RN 56911-27-4).		
COLUMN TO THE PART OF THE PART	From proton affir (934) kJ/mol.	(200) (838) nity of 2,3-cyclobutenopyri	dine. PA = (223.3) kcal/m	ool,	

Table 1. Positive Ion Table - Continued

			C TOIL TUDIC				
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>8</sub> NO + O CCH <sub>3</sub>	From proton affir PA = 217.2 kcal/i			one (RN 350	-03-8).		
на Сснз	From proton affir PA = 217.4 kcal/i			one (RN 112	2-54-9).		
C <sub>7</sub> H <sub>8</sub> NO <sub>2</sub> +	From proton affin PA = 196.8 kcal/r			9-99-0) (84R	OL/HOU).		
C <sub>7</sub> H <sub>8</sub> N <sub>2</sub> O <sub>2</sub> + NHCH <sub>3</sub>	(8.1) IP is onset of photon	(201) coelectron ba	(843) and.	15	61	•EST	100-15-2
C <sub>7</sub> H <sub>8</sub> O +	(8.5) See also: 82DES/I	(172) OUT, 83RUS	(720) S/FRE. IP is on	-24.0 set of photoc	-100.4 electron band (86	77PED/RYL BAL/JON).	100-51-6
OH CH3	8.14 IP from 83RUS/FI	158 R.E.	661	-30	-124	79KUD/KUD	95-48-7
он снз	8.29 IP from 85OIK/AI	160 BE, 83RUS/	668 FRE.	-31.6±0.3	−132.3±1.2	79KUD/KUD	108-39-4
HO CH <sub>3</sub>	8.13 IP from 83RUS/FI	157 R.E.	659	-29.9	-125.1	79KUD/KUD	106-44-5

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
С <sub>7</sub> H <sub>8</sub> O +	(8.24) IP from 83RUS/F	(188) RE.	(788)	-1.7	-7.1	83RUS/FRE	1121-65-9
Осн3	8.21±0.02 See also: 83KLA/	173 KOV.	724	-16.2±0.3	-68.0±1.1	77PED/RYL	100-66-3
	(≤8.86)	( <b>≤</b> 197)	( <b>≤</b> 826)	-7	-29	*EST	694-98-4
	(≤9.25)	(≤210)	(≤877)	-4	-15	*EST	694-71-3
СНЗ	(8.9) IP is onset of phot	(251) toelectron t	(1049) pand (84GLE/HA	45 I).	190	*EST	3350-02-5
C <sub>7</sub> H <sub>8</sub> OS + 0   CH <sub>3</sub>	(8.5) IP is onset of phot	(191) coelectron b	(800) and.	<b>-</b> 5	-20	•EST	1193-82-4
С <sub>7</sub> H <sub>8</sub> O <sub>2</sub> + ОН	(7.50)	(115)	(482)	-58	-242	•EST	150-76-5
H <sub>3</sub> C CH <sub>3</sub>	(9.03) IP from 85GRU/S	(152) PI	(636)	<b>-</b> 56	-235	•EST	1004-36-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	•	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>7</sub> H <sub>8</sub> O <sub>2</sub> + CH <sub>3</sub>	(8.51) IP from 85GRU,	(135) /SPI	(564)	-61	-257	*EST	675-09-2
	(9.4) IP is onset of pho	(168) otoelectron t	(702) pand (85GLE	~49 E/JAH).	-205	*EST	60582-65-2
offo	(9.26) IP is onset of pho	(161) Otoelectron b	(674) pand (80FRC	-52 n/WES).	-219	*EST	27943-47-1
С <sub>7</sub> H <sub>8</sub> O <sub>2</sub> S +	(9.5) IP is onset of pho	(159) otoelectron b	(663) and (81MOI		-253.4±3.0	77PED/RYL	3112-85-4
C <sub>7</sub> H <sub>8</sub> S <sup>+</sup>	7.94±0.02	206	864	23.4±0.3	97.8±1.2	77PED/RYL	100-68-5
© CH <sub>2</sub> SH	(8.5) IP is onset of pho	(218) stoelectron b	(914) and.	22±0.7	94±3	77PED/RYL	100-53-8
CH3	(≤8.31)	(≤211)	(≤881)	19	79	•EST	137-06-4
H <sub>3</sub> C SH	(≤8.44)	(≤214)	(≤893)	19	79	*EST	108-40-7

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Table	e - Continued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>8</sub> S +	(8.0) IP is onset of pho	(203) (851) otoelectron band.	19 79	•EST	106-45-6
C <sub>7</sub> H <sub>8</sub> Se <sup>+</sup>	(7.4) IP is onset of pho	(207) (867) ptoelectron band (81BAK)	36 153 /ARM).	*EST	4346-64-9
CH3	≤8.4 IP from 81BAK/4	(≤225) (≤940) ARM.	31 130	*EST	37773-21-0
C <sub>7</sub> H <sub>9</sub> +				111.75	
H <sub>2</sub> CH <sub>3</sub>	From proton affi 794. kJ/mol.	188 786 nity of C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub> (RN 108	8-88-3). PA = 189.8 kcal/mo	ol,	
$\bigcirc$ .	From proton affii PA = 203.4 kcal/		(RN 121-46-0) (86HOU/SC	Н).	
C <sub>7</sub> H <sub>9</sub> Br <sup>+</sup>	(8.7) IP is onset of pho	(261) (1091) otoelectron band (84ABE,	60 252 /DEL).	*EST	78995-60-5 -59346-69:9- duplication by Cathy Br r338
Br	(8.55) IP is onset of pho	(218) (912) otoelectron band (85DEL	21 87 /PIG).	*EST	31991-53-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>7</sub> Н <sub>9</sub> I +	(8.6) IP is onset of pho	(273) toelectron b	(1143) and (84ABE/DE	75 IL).	313	*EST	74725-76-1
C <sub>7</sub> H <sub>9</sub> N <sup>+</sup>	8.64±0.05 See also: 79AUE/	219 BOW.	918	20±0.7	84±3	77CAR/LAY	100-46-9
ONHCH3	7.33±0.02 See also: 84MAU,	189 /NEL, 83KI	792 .A/KOV.	20	85	78COL/BEN	100-61-8
CH <sub>3</sub>	7.44±0.02	(185)	(773)	13±0.2	55±1	*EST	95-53-4
CH <sub>3</sub>	7.50±0.02	(186)	(778)	13±0.4	54±2	*EST	108-44-1
CH <sub>3</sub>	(7.24±0.02)	(180)	(753)	13	54	*EST	106-49-0
CH <sub>3</sub> CH <sub>3</sub>	(8.85 $\pm$ 0.02) $\Delta_f H$ (Ion) predicte Corresponding IP				68.3 224 kcal/mol, 937	77PED/RYL kJ/mol.	583-61-9
CH <sub>3</sub>	(8.85±0.03)	(219)	(918)	15.3	63.9	77PED/RYL	108-47-4

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Tabl	e - Contii	nued		
ON Neutral	Ionization potential eV	Δ <sub>f</sub> H(	Ion) I kJ/mol	Δ <sub>f</sub> H(N kcal/mo	eutral) l kJ/mol	Neutral reference	CAS registry number
C7H9N+							
H <sub>3</sub> C CH <sub>3</sub>	(≤8.80±0.05) ∆ <sub>f</sub> H(Ion) predict Corresponding IF					77PED/RYL 933 kJ/mol.	589-93-5
H <sub>3</sub> C N CH <sub>3</sub>	8.86±0.03 See also: 81KIM/	218 KAT.	913	14.0±0.4	58.7±1.6	77PED/RYL	108-48-5
СН <sub>3</sub>	(≤9.15) ∆ <sub>f</sub> H(Ion) predict Corresponding II		-			77PED/RYL 937 kJ/mol.	583-58-4
H3C CH3	(≤9.25) ∆ <sub>f</sub> H(Ion) predict Corresponding IF			17.4±0.2 es of pyridines		77PED/RYL 946 kJ/mol.	591-22-0
7H <sub>9</sub> NO <sup>+</sup>							
NH <sub>2</sub> OCH <sub>3</sub>	(7.46±0.1)	(158)	(663)	-14	-57	*EST	90-04-0
NH2 OCH3	(7.76±0.1)	(163)	(682)	-16	-67	*EST	536-90-3
H <sub>3</sub> CO NH <sub>2</sub>	(7.44)	(158)	(660)	-14	-58	*EST	104-94-9
OC2H5	(≤9.25±0.03)	(≤202)	(≤845)	-11	<b>-</b> 47	*EST	33399-46-1

Table 1. Positive Ion Table - Continue	Table 1.	Positive	Ion Table	_	Continued
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	Table 1. Positive Ion Table - Continued							
ION Neutral	Ionization potential	∆ <sub>f</sub> H( keal/mo	Ion) I kJ/mol	Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number	
C <sub>7</sub> H <sub>9</sub> N <sub>2</sub> O <sub>2</sub> + NHCH <sub>3</sub> ) H	+ From proton affi PA = 212.9 kcal/			niline (RN 100-2	23-2) (84ROL	'HOU).		
С <sub>7</sub> H <sub>9</sub> O +	† Prom proton affi 789. kJ/mol.	153 nity of C <sub>6</sub> H	641 I <sub>S</sub> CH <sub>2</sub> OH (RN	V 100-51-6) (787	raf/taa). P	A = 188.5 kcal/mol	,	
Осн3	From proton affin	149 nity of C <sub>6</sub> H	624 1 <sub>5</sub> OCH <sub>3</sub> (RN 1	.00-66-3). PA =	= 200.3 kcal/m	ol, 838. kJ/mol.		
ОН	From proton affii (86HOU/SCH).				V 694-98-4).			
OH	From proton affir (86HOU/SCH).				N 694-71-3).			
$C_7H_{10}^+$ (CH <sub>2</sub> =CH) <sub>3</sub> CH	(≤9.5) IP from 83GLE/F	(≤265) łAI.	(≤1108)	46	191	*EST	26456-63-3	
(E,E)-CH <sub>2</sub> = CHCH = CH	$CH = CHCH_3$ 7.96±0.02	(215)	(901)	32±1	133±4	*EST	17679-93-5	
$C_2H_5C=CC(CH_3)=CH_2$	(8.66±0.01)	(247)	(1033)	47	197	*EST	23056-94-2	
(E)-HC $\equiv$ CC(C <sub>2</sub> H <sub>5</sub> ) $\equiv$ CHC	CH <sub>3</sub> (8.70±0.01)	(247)	(1031)	46	192	*EST	14272-82-3	
	≤8.31±0.03	≤214	≤896	22.5±0.2	94.2±0.9	77PED/RYL	4054-38-0	

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Table 1. Positive Ion Table - Continued

			C 1011 Table	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>7</sub> H <sub>10</sub> +	(8.85±0.03)	(232)	(970)	28	116	76JEN	7161-35-5
CH <sup>3</sup>	8.2 IP is onset of phot	(206) toelectron b	(860) and (85GUI/PFI	16 3).	69	*EST	4125-18-2
CCCCCH3	(8.83)	(257)	(1075)	53	223	82KOZ/MAS	51549-86-1
	(≤8.69)	(≤227)	( <b>≤</b> 951)	27	113	*EST	2566-57-6
	(9.37)	(250)	(1046)	34	142	*EST	4927-03-1
4	8.82±0.03 See also: 83HOU/	225 RON.	941	21±1	90±4	80ROG/CHO	498-66-8
	8.72 IP is onset of phot	245.5 coelectron b	1027.1 and (85DEL/PIG	44.4 i).	185.8	85SVYЛOF	287-13-8
$\bigotimes$	(8.7) IP is onset of phot	(260) coelectron b	(1089) and (84ABE/DEI	60 L.).	250	*EST	51273-50-8

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry			
C <sub>7</sub> H <sub>10</sub> +										
	(8.72) IP is onset of pho-	(221) toelectron l	(926) pand (85DEL/	20±1 PIG).	85±4	80ROG/CHO	279-19-6			
	(≤8.48)	(≤236)	(≤986)	40	168	*EST	52708-23-3			
CaH10F2 +					<del></del>		·			
C <sub>7</sub> H <sub>10</sub> F <sub>2</sub> + CF <sub>2</sub>	8.84 IP from 80SAR/W	(103) 'OR.	(433)	-100	-420	*EST	696-32-2			
C <sub>7</sub> H <sub>10</sub> N <sup>+</sup>										
(CH <sub>2</sub> NH <sub>2</sub> )H <sup>+</sup>	From proton affin	169 ity of C <sub>6</sub> H <sub>5</sub>	707 CH <sub>2</sub> NH <sub>2</sub> (RN	100-46-9). PA	⊾ = 216.8 kca	l/mol,				
(NHCH3) H+	From proton affini 912.5 kJ/mol.	168 ity of C <sub>6</sub> H <sub>5</sub>	703 NHCH <sub>3</sub> (RN :	.00-61-8). PA	= 218.1 kcal/	moi,				
(CH <sub>3</sub> ) H <sup>+</sup>	From proton affini 893. kJ/mol.	165 ty of 3-CH <sub>3</sub>	690 3C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> (R	N 108-44-1). P	A = 213.4 kc	al/moi,				
(H <sub>3</sub> C NH <sub>2</sub> ) H+	From proton affini 894. kJ/mol.	165 ty of 4-CH <sub>3</sub>	690 ,C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> (R	N 106-49-0). P	A = 213.7 kc	al/mol,				
CH <sub>3</sub>	From proton affinit	156 ty of 2,3-din	652 nethylpyridine	(RN 583-61-9)	. PA = 226.2	kcal/mol,				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number						
C <sub>7</sub> H <sub>10</sub> N <sup>+</sup> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	From proton affin 951. kJ/mol.	153 643 ity of 2,4-dimethylpyridin	e (RN 108-47-4). PA = 227.	3 kcal/mol,							
H <sub>3</sub> C CH <sub>3</sub>	From proton affin 946. kJ/mol.	156 651 ity of 2,5-dimethylpyridin	e (RN 589-93-5). PA = 226.	2 kcal/mol,							
H3C N CH3	From proton affin 955. kJ/mol.	152 634 ity of 2,6-dimethylpyridin	e (RN 108-48-5). PA = 228.	2 kcal/mol,							
CH3 CH3	From proton affin 946. kJ/mol.	157 654 hity of 3,4-dimethylpyridin	e (RN 583-58-4). PA = 226.	0 kcal/mol,							
н <sub>3</sub> с С <sub>3</sub> н	From proton affin 943. kJ/mol.	158 661 hity of 3,5-dimethylpyridin	e (RN 591-22-0). PA = 225.	5 kcal/mol,							
N C2HE	From proton affin 946. kJ/mol.	159 665 uity of 2-ethylpyridine (RN	V 100-71-0). PA = 226.2 kcal	/mol,							
C2H5	From proton affir 937. kJ/mol.	162 679 hity of 3-ethylpyridine (RN	N 536-78-7). PA = 223.9 kcal	/mol,							
C <sub>2</sub> H <sub>5</sub>	From proton affir (940) kJ/mol.	(161) (672) hity of 4-ethylpyridine (RN	N 536-75-4). PA = (224.6) kc	ral/mol,							

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	•	f(Ion) nol kJ/mol	-	I(Neutral) nol kJ/mol	Neutral reference	CAS registry number			
C <sub>7</sub> H <sub>10</sub> NO +				<del></del>						
NH <sub>2</sub> OCH <sub>3</sub>	From proton affi 898. kJ/mol.	137 nity of 2-0	<i>575</i> CH <sub>3</sub> OC <sub>6</sub> H <sub>4</sub> NH <sub>2</sub>	, (RN 90-04	-0). PA = 214.7	kcal/mol,				
H <sub>3</sub> CO NH <sub>2</sub>	From proton affii 910. kJ/mol.	132 nity of 3-0	553 CH <sub>3</sub> OC <sub>6</sub> H <sub>4</sub> NH <sub>2</sub>	(RN 536-90	0-3). PA = 217.6	kcal/mol,				
(H3CO NH2) H	† From proton affii 897. kJ/mol.	137 nity of 4-0	575 CH <sub>3</sub> OC <sub>6</sub> H <sub>4</sub> NH <sub>2</sub>	(RN 104-94	4-9). PA = 214.3	kcal/mol,				
CH2OCH3	From proton affir PA = (226.0) kca			methyl (RN	23579-92-2).					
C <sub>7</sub> H <sub>10</sub> NS +										
NH <sub>2</sub>	From proton affin 897. kJ/mol.	176 lity of 3-n	735 nethylthiobenzen	amine (RN	1783-81-9). PA	= 214.5 kcal/mol,				
C <sub>7</sub> H <sub>10</sub> N <sub>2</sub> +					-	***************************************				
NCH312	7.75±0.15	(211)	(880)	32	132	*EST	5683-33-0			
NO NICH312	(≤7.82)	(≤214)	(≤898)	34	144	84BIC/PIL	1122-58-3			
С <sub>7</sub> H <sub>10</sub> N <sub>2</sub> O +	(7.62±0.05)	(191)	(798)	15	63	•EST	3618-79-9			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
С <sub>7</sub> H <sub>10</sub> N <sub>2</sub> O +	(7.85±0.05)	(197)	(824)	16	67	*EST	36100-40-0			
(CH3)2N NO	(7.0) IP is onset of pho	(178) toclectron t	(746) pand.	17	71	*est	1005-31-8			
С <sub>7</sub> H <sub>10</sub> O <sup>+</sup>	(9.1)	(249)	(1041)	39	163	•EST	1121-37-5			
A	8.94±0.02 See also: 80FRO/	166 WES.	695	-40±0.7	-168±3	78STE2	497-38-1			
	≤9.01±0.02	≤176	≤735	-32±0.7	−134±3	78STE2	10218-02-7			
C <sub>7</sub> H <sub>10</sub> S <sup>+</sup>	(≤8.6±0.2)	(≤208)	(≤870)	10	40	*EST	1551-27-5			
C <sub>7</sub> H <sub>11</sub> +	6.84 IP from 79HOU. PA = 199.9 kcal/i $\Delta_f H (t - C_4 H_9^+),$ equilibria 185.8 kc radical = $\Delta_f H (C_4 H_9^+)$	mol, 836. kJ 185 kcal/mo cal/mol, 777	/mol. From hyd ol, 773 kJ/mol (7 .4 kJ/mol (85SI	lride transfer ( 76SOL/FIE, 83	equilibria rela SSHA/SHA); i		30967-37-4 <sup>T</sup> er			

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		∆ <sub>f</sub> H(Nekcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C <sub>7</sub> H <sub>11</sub> Br <sup>+</sup>							***************************************		
Br	9.55 IP is onset of pho	(209) stoelectron b	(874) eand (84DEL/AI	-11 BE, 85HON	~47 /HEI2).	*EST	13474-70-9		
C <sub>7</sub> H <sub>11</sub> Cl <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> CCH = C = CHCl	9.05	(228)	(954)	19	81	*EST	65388-53-6		
	IP is onset of pho		and (OSELS) VE	.K).					
C <sub>7</sub> H <sub>11</sub> CIN <sup>+</sup>	From proton affir PA = (224.0) kca			2.2.2]oct-2-c	ene				
C <sub>7</sub> H <sub>11</sub> I <sup>+</sup>									
	(8.8) IP is onset of pho	(206) toelectron b	(863) and (84DEL/AB	3 BE).	14	*EST	930-80-3		
	(9.00) IP from 84HON/F	(210) łEI.	(878)	2	10	•EST	57173-48-5		
	9.00 IP from 84HON/F	(211) IEI.	(882)	3	14	*EST	30983-85-8		
C <sub>7</sub> H <sub>11</sub> N <sup>+</sup>					······		<u></u>		
	(8.02)	(222)	(930)	37	156	*EST	13929-94-7		
NH	(≤8.35±0.05)	(≤218)	(≤913)	26	107	*est	3693-58-1		
			***************************************		<del></del>	<del></del>			

Table 1. Positive Ion Table - Continue	Table 1.	Positive	Ion Table	-	Continued
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ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>11</sub> NO <sup>+</sup>	(≤8.2) IP from 79AUE/1	(≤161) BOW.	(≤675)	-28	-116	*EST	3731-38-2

## $C_7H_{11}N_2^{+}$



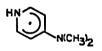
168 703

From proton affinity of N,N-dimethyl-2-pyridinamine (RN 5683-33-0). PA = 229.2 kcal/mol, 959. kJ/mol.



(174) (726)

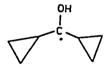
From proton affinity of N,N-dimethyl-3-pyridinamine (RN 18437-57-5). PA = (229.9) kcal/mol, (962) kJ/mol.



163 684

From proton affinity of N,N-dimethyl-4-pyridinamine (RN 1122-58-3). (86TAF/GAL, 77ARN/CHA). PA = 236.6 kcal/mol, 990. kJ/mol.

## $C_7H_{11}O^+$



194 812

From proton affinity of dicyclopropylmethanone (RN 1121-37-5). PA = 210.7 kcal/mol, 881.5 kJ/mol.



123 514

From proton affinity of bicyclo[2.2.1]heptan-2-one (RN 497-38-1) (86HOU/SCH). PA = 202.6 kcal/mol, 848. kJ/mol.



134 561

From proton affinity of bicyclo[2.2.1]heptan-7-one (RN 10218-02-7) (86HOU/SCH). PA = 199.5 kcal/mol, 835. kJ/mol.

## $C_7H_{12}^{+}$

(E)- $CH_3CH_2CH_2CH = CHCH = CH_2$ 

(0.45)

IP from 81MAS/MOU.

(204) (852)

8

35

\*EST

2384-92-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo		Δ <sub>f</sub> H(N kcal/mol	eutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>12</sub> +							
(E),(E)-CH <sub>3</sub> CH <sub>2</sub> CF	H=CHCH=CHCH <sub>3</sub> ≤8.17 IP from 81MAS/N	(≤194) MOU.	(≤812)	6	24	•EST	2384-94-3
CH3	8.89±0.01 See also: 83BRO/	(196) BUS.	(822)	-9	-36	*EST	591-48-0
(E)-(CH <sub>3</sub> ) <sub>2</sub> CHCH=	<del>-</del>						
	≤8.47 IP from 81MAS/N	(≤202) 4OU.	(≤847)	7	30	*EST	32763-70-5
$(E)-C_2H_5C(CH_3) =$	CHCH = CH <sub>2</sub> (8.19)	(195)	(814)	6	24	*EST	4842-93-7
	IP from 81MAS/N	IOU.					
(E)-CH <sub>3</sub> CH = C(CH	3)C(CH <sub>3</sub> ) = CH <sub>2</sub> (8.28) IP from 81MAS/N	(194) 10U.	(813)	3	14	•EST	1625-49-6
$CH_2 = C(CH_3)C(C_2)$	H <sub>5</sub> ) = CH <sub>2</sub>						
	(8.65) IP from 81MAS/N	(205) 1OU.	(860)	6	25	*EST	14145-44-9
n-C <sub>5</sub> H <sub>11</sub> C≡CH	(10.04) From plot of trend	(256) ds in IP's (	(1073) of 1-alkynes, an l	25±0.7 IP of ~9.95 eV	104±3 would be pred	79ROG/DAG licted.	628-71-7
n-C <sub>4</sub> H <sub>9</sub> C≅CCH <sub>3</sub>	(9.33±0.01)	(235)	(985)	20±0.5	85±2 _	79ROG/DAG	1119-65-9
n-C <sub>3</sub> H <sub>7</sub> C≡CC <sub>2</sub> H <sub>5</sub>	(9.26±0.01)	(233)	(976)	20	83±2	79ROG/DAG	2586-89-2
(tert-C <sub>4</sub> H <sub>9</sub> )C≡CCH <sub>3</sub>	(9.276±0.10) See also: 85ORL/I	(235) BOG.	(984)	21	89	*EST	999-78-0
	(8.91±0.04)	(203)	(850)	-2.2±0.2	-9.4±0.9	77PED/RYL	628-92-2
<b>◯</b> =CH <sub>2</sub>							
	8.93±0.01 IP from 80SAR/W	200	837	-6±1	-25±4	79FUC/PEA	1192-37-6

Table 1. Positive Ion Table - Continued

	Table	1. Posi	itive Ion Tabl	e - Contii	nued		
ION Neutral	Ionization potential eV		I(Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/moi	Neutral reference	CAS registry number
С <sub>7</sub> H <sub>12</sub> +	8.67±0.02	189.6	793.3	-10.3±0.2	2 -43.2±0.7	77PED/RYL	591-49-1
н3С	(8.91±0.01)	(197)	(824)	<b>-</b> 9	-36	•est	591-47-9
C2H5	(8.53±0.01)	(192)	(801)	- -5±0.7	-22±3	82ALL/DOD	2146-38-5
_c <sub>2</sub> н <sub>5</sub>	8.88±0.01	202	843	-3	-14	82ALL/DOD	694-35-9
$\bigcirc$	(9.03±0.02)	(209)	(873)	0.5±0.5	2±2	77PED/RYL	286-08-8
4	9.77±0.03	213	894	-12±1	~49±4	80ROG/CHO	279-23-2
7H <sub>12</sub> BrN <sup>+</sup>	(≤8.5) IP from 79AUE/B	(≤197) OW.	(≤823)	1	3	*EST	
7H <sub>12</sub> CIN+	(≤8.8) IP from 79AUE/B	(≤192) OW.	(≤805)	-11	-44	*EST	42332-45-6

Table 1. Positive Ion Table - Continued

	Tubic .	1. 1 03111	ve ion lable	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>12</sub> F <sub>2</sub> N <sup>+</sup>						,	•
$\left( \bigcap_{F_2} \right)$ H <sup>†</sup>	From proton affin PA = (221.8) kca			rcio[2.2.2]oc	tane.		
C <sub>7</sub> H <sub>12</sub> N <sup>+</sup>						, , , , , , , , , , , , , , , , , , , ,	
(N) H+	From proton affin PA = (228.5) kcal			-2-ene (RN )	13929-94-7).		
C <sub>7</sub> H <sub>12</sub> NO +			<del></del>				
(N) H+	From proton affin PA = (221.9) kcal			an-3-one (Ri	N 3731-38-2).		
C <sub>7</sub> H <sub>12</sub> O +				•	-,		
	≤9.14	≤152	≤634	-59.1±0.4	−247.5±1.8	77PED/RYL	502-42-1
сно	(9.6±0.1) IP from 82SPL/CA	(165) AL.	(691)	-56.2	-235.1	82SPL/CAL	2043-61-0
C <sub>7</sub> H <sub>12</sub> OSi <sup>+</sup>							
SI(CH3)3	(8.1) IP is onset of photo	(134) Delectron b	(563) and (83ZYK/EF	-52 RC).	-219	•EST	1578-33-2
O SI-CH3 C2H5	≤8.53 IP from 83ZYK/Bi		(≤630)	-46	-193	*EST	13271-69-7

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry				
C <sub>7</sub> H <sub>12</sub> O <sub>2</sub> +	(8.5) IP is onset of pho	(161) (673) toelectron band (84GLE,	35 -147 DOB).	*EST	68525-35-9				
C <sub>7</sub> H <sub>12</sub> SSi <sup>+</sup>									
Silch313	(8.1) IP is onset of photon	(173) (726) toelectron band (83VES/	–13 –56 HAR).	*EST	18245-28-8				
C <sub>7</sub> H <sub>13</sub> +									
(CH <sub>3</sub> ) <sub>2</sub> CCHC(CH <sub>3</sub> ) <sub>2</sub>		(157) (655) hity of (CH <sub>3</sub> ) <sub>2</sub> C = CHC(C l/mol, (892.) kJ/mol.	CH <sub>3</sub> ) = CH <sub>2</sub> . (RN 1000-86-8)		60602-30-4				
—сн <sub>з</sub>	From proton affin 832. kJ/mol.	157 655 ity of 1-methylcyclohexen	e. (RN 591-49-1). PA = 19	3.8 kcal/mol,	16998-65-5				
Снз	From appearance	(169) (708) potential measurements	(81HER/SIC).		41771-02-2				
Снз	From appearance	(173) (722) potential measurements (	(81HER/SIC).		61838-22-0				
СН <sub>3</sub>	From appearance	(172) (720) potential measurements (	(81HER/SIC).		21029-96-9				
CH <sub>3</sub>	From proton affini 829. kJ/mol.	158 660 ity of 1,2-dimethylcyclope	ntene. (RN 765-47-9). PA =	: 198.1 kcal/mol,					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>13</sub> BrN <sup>+</sup>				,			
$\left( \begin{array}{c} N \\ \end{array} \right) H^+$	From proton affii (950.) kJ/mol.	139 nity of 3-bro	583 omo-1-azabicyclo	o[2.2.2]octano	e. PA = (227.1)	kcal/mol,	
C <sub>7</sub> H <sub>13</sub> ClN <sup>+</sup>	<del></del>						
(N) CI) HT	From proton affii PA = (225.8) kca			o[2.2.2]octane	: (RN 42332-45-6	).	
C <sub>7</sub> H <sub>13</sub> FN <sup>+</sup>							
(	From proton affir (954.) kJ/mol.	(160) nity of 3-fluc	(670) oro-1-azabicyclo	[3.2.1]octane	. PA = (228.1)	ccal/mol,	
C <sub>7</sub> H <sub>13</sub> N <sup>+</sup>							
H3C-N-CH2	(≤8.36) IP from 80SAR/V	(≤204) VOR.	(≤855)	11	48	*EST	13669-28-8
	(7.1) IP is onset of pho	(197) toelectron b	(823) pand (81MUL/P	33 RE2).	138	*EST	81156-87-8
	(6.9) IP is onset of pho	(192) toelectron b	(803) pand (81MUL/P	33 RE2).	137	*EST	81156-88-9
	(7.4) IP is onset of photon	(170) toelectron b	(710) eand.	-1.0±0.3	-4.2±1.2	77PED/RYL	100-76-5
NH	(≤8.22±0.05)	(≤187)	(≤782)	-3	-11	*EST	280-38-6

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued											
ION Neutral	Ionization potential	•	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>7</sub> H <sub>13</sub> N <sup>+</sup>		* * * * * * * * * * * * * * * * * * * *									
NH <sub>2</sub>	(8.33) IP from 79AUE	(185) /BOW.	(776)	−7±0.2	28±1	*EST	31002-73-0				
H NH <sub>2</sub>	(8.41) IP from 79AUE/	(186) ⁄BOW.	(779)	-8±0.2	-32±1	*EST	7242-92-4				
C <sub>7</sub> H <sub>13</sub> NO <sup>+</sup>				<del></del>			· · · · · · · · · · · · · · · · · · ·				
NOH NOH	(8.88±0.03) IP from 79GOL/	(179) KUL.	(749)	-26	-108	*EST	2158-31-8				
C <sub>7</sub> H <sub>14</sub> +											
1-C <sub>7</sub> H <sub>14</sub>	(9.44)	(202.8)	(848.9)	-14.8	-61.9	84WIB/WAS	592-76-7				
2-C <sub>7</sub> H <sub>14</sub>	(8.84±0.02) IP from 77ASH/	(187) BUR.	(782)	-17	-71	84WIB/WAS	592-77-8				
3-C <sub>7</sub> H <sub>14</sub>	(8.92) IP from 81HOL/	(189) FIN.	(790)	-17	-71	84WIB/WAS	14686-14-7				
(CH3)3CCH2CH = CH2	9.40±0.01	197	823	-20.0±0.2	-83.8±0.8	77PED/RYL	762-62-9				
$n-C_4H_9C(CH_3) = CH_2$	(9.04±0.01)	(190)	(796)	-18	<b>-7</b> 6	*EST	6094-02-6				
$(CH_3)_2CHCH_2C(CH_3) = 0$	CH <sub>2</sub> (9.03±0.01)	(188)	(787)	-20.0±0.3	-83.8±1.4	77PED/RYL	2213-32-3				
(CH3)3CC(CH3) = CH2	(9.02±0.01)	(187.5)	(784.4)	-20.4±0.3	-85.5±1.4	77PED/RYL	594-56-9				
(Z)- $(CH3)2CHCH2CH = C$	CHCH <sub>3</sub> (8.92±0.01)	(187)	(782)	-19	<b>-</b> 78	*EST	13151-17-2				
(E)-(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH = C	CHCH <sub>3</sub> (8.92±0.01)	(186)	(779)	-20	-82	*EST	7385-82-2				
(E)- $C_2H_5CH(CH_3)CH=C$	CHCH <sub>3</sub> (8.91±0.01)	(186)	(778)	-20	-82	*EST	3683-22-5				
$C_3H_7CH = C(CH_3)_2$	(8.62) IP from 81HOL/I	(179) FIN.	(748)	-20	-84	*EST	2738-19-4				

Table 1. Positive Ion Table - Continued

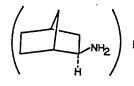
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(I	on) kJ/mol	Δ <sub>f</sub> H(Ne	eutral) kJ/mol	Neutral reference	CAS registry
		kcai/moi	kJ/moi	Kcaymoi	KJ/moi	reference	number
$C_7H_{14}^+$ $C_2H_5C(CH_3) = C(CH_3)_2$							
	(8.21±0.01)	(168)	(702)	-21	-90	•EST	10574-37-5
$(Z)$ - $(CH_3)_3$ CCH = CHCH	_						
	(8.92±0.01)	(188)	(788)	-17.4±0.3	-72.6±1.4	77PED/RYL	762-63-0
$(E)$ - $(CH_3)_3$ CCH = CHCH	3 (8.91±0.01)	(184)	(771)	<b>-21 3+0 3</b>	-88.8±1.1	77PED/RYL	690-08-4
	(0.7110.01)	(101)	(171)	21.010.0	00.011.1	//LD/KID	070-00-4
	9.97	202	844	-28.3±0.1	-118.2±0.6	77PED/RYL	291-64-5
$\bigcirc$	300 K ionization e to cyclohexane an		-	-		ve	
	<b>.,</b>	,	-12		,		
снз	9.64 IP from charge tra	185 ansfer equi	775 librium consta		-154.7±1.0	77PED/RYL U: 82LIA).	108-87-2
	Reference IP's, flu						
СН3	(9.92±0.05)	(198)	(828)	-30.9±0.3	-129.5±1.3	77PED/RYL	1192-18-3
CH3	IP from 81HER/S	IC.					
CH <sub>3</sub>							
	(9.95±0.05) IP from 81HER/S	(197) IC.	(823)	-32.7±0.3	-136.7±1.1	77PED/RYL	822-50-4
					x <sub>n</sub>		
С2Н5	(10.12±0.02)	(203)	(850)	-30,3±0.2	-126.7±0.9	77PED/RYL	1640-89-7
<b>)</b>	· · · · · · ·	• •	` '				

 $C_7H_{14}N^+$ 



132 551

From proton affinity of 1-azabicyclo[2.2.2]octane (RN 100-76-5). (86TAF/GAL). PA = 233.1 kcal/mol, 975. kJ/mol.



H<sup>+</sup> From proton affinity of bicyclo[2.2.1]heptan-2-amine,endo (RN 31002-73-0). PA = (221.7) kcal/mol, (927.) kJ/mol.

Table 1. Positive Ion Table - Continued

						Table 1. Positive Ion Table - Continued										
Ionization potential eV					Neutral reference	CAS registry number										
	•	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·										
(≤8.63)	(≤208)	(≤872)	9.4±0.8	39.3±3.6	80ENG	2721-31-5										
(≤8.0) IP from 79AUE/E	(≤188) 3OW.	(≤785)	4	17	*EST	6238-14-8										
≤8.02 IP from 82LEV/L	(≤215) IA. See als	(≤898) o: 84NEL.	30	124	*EST	6523-29-1										
≤7.43	(≤192)	(≤802)	20	85	*EST	283-47-6										
≤7.75	(≤191)	(≤800)	12	52	*EST	281-17-4										
(7.63) IP from 82LEV/L	(204) IA. See als	(853) o: 84NEL.	28	117	*EST	5721-43-7										
			<del> </del>													
(7.5) IP is onset of phot	(177) oelectron l	(742) pand (80AND/DE	4 EV).	18	*EST	30826-80-3										
	EV  From proton affin (RN 7242-92-4). I  (≤8.63)  (≤8.0) IP from 79AUE/F  ≤8.02 IP from 82LEV/L  ≤7.43  (7.63) IP from 82LEV/L  (7.5)	136 From proton affinity of bicyc (RN 7242-92-4). PA = (221  (≤8.63) (≤208)  (≤8.0) (≤188) IP from 79AUE/BOW.  ≤8.02 (≤215) IP from 82LEV/LIA. See als  ≤7.43 (≤192)  (7.63) (204) IP from 82LEV/LIA. See als	eV kcal/mol kJ/mol  136 570  From proton affinity of bicyclo[2.2.1]heptan-2 (RN 7242-92-4). PA = (221.7) kcal/mol, (927.  (≤8.63) (≤208) (≤872)  (≤8.0) (≤188) (≤785) IP from 79AUE/BOW.  ≤8.02 (≤215) (≤898) IP from 82LEV/LIA. See also: 84NEL.  ≤7.43 (≤192) (≤802)  ≤7.75 (≤191) (≤800)  (7.63) (204) (853) IP from 82LEV/LIA. See also: 84NEL.	136   570     From proton affinity of bicyclo [2.2.1]   heptan-2-amine, exo (RN 7242-92-4). PA = (221.7)   kcal/mol, (927.)   kJ/mol.     (\$8.63)	136   570   From proton affinity of bicyclo[2.2.1]heptan-2-amine,exo (RN 7242-92-4). PA = (221.7) kcal/mol, (927.) kJ/mol.   (s8.63)	136   570   From proton affinity of bicyclo[2.2.1]heptan-2-amine,exo (RN 7242-92-4). PA = (221.7) kcal/mol, (927.) kJ/mol.   (48.63)										

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>14</sub> O + n-C <sub>6</sub> H <sub>13</sub> CHO	(9.65±0.02)	(159)	(667)	-63±1	−264±4	77PED/RYL	111-71-7
(СН <sub>3</sub> ) <sub>2</sub> СНСН(С <sub>2</sub> Н <sub>5</sub> )СНС	) (9.44) IP from 81HOL/F	(149) FIN.	(624)	-69	-287	*EST	26254-92-2
n-C <sub>5</sub> H <sub>11</sub> COCH <sub>3</sub>	9.30±0.01	142	596	-72	-301	75TRC	110-43-0
n-C <sub>4</sub> H <sub>9</sub> COC <sub>2</sub> H <sub>5</sub>	(9.22±0.04) IP is average of va	(141) ilues from 8	(590) 1HOL/FIN, 86T	-71 RA/MCA.	-299	75TRC	106-35-4
(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> CO	9.10±0.04	138	578	-72	-300	75TRC	123-19-3
(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH <sub>2</sub> COCH	I <sub>3</sub> (9.28±0.01)	(140)	(587)	-74	-308	*EST	110-12-3
СН <sub>3</sub> (СН <sub>2</sub> ) <sub>2</sub> СН(СН <sub>3</sub> )СОС	CH <sub>3</sub> (9.20±0.02) IP is average of va	(139) llues from 8	(581) 1HOL/FIN, 86TI	-73 RA/MCA.	-307	*EST	2550-21-2
neo-C <sub>5</sub> H <sub>11</sub> COCH <sub>3</sub>	(9.23±0.01)	(137)	(571)	-76	-319	*EST	590-50-1
C <sub>2</sub> H <sub>5</sub> C(CH <sub>3</sub> ) <sub>2</sub> COCH <sub>3</sub>	(9.02±0.01)	(133)	(555)	<b>-</b> 75	-315	*EST	20669-04-9
(iso-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> CO	8.95±0.01	132	552	-74.4±0.3	-311.3±1.1	77PED/RYL	565-80-0
CH <sub>3</sub>	(9.8±0.2)	(140)	(588)	-86	-358	85WIB/WAS	590-67-0
1							
C <sub>7</sub> H <sub>14</sub> O <sub>2</sub> +  H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub>	≤9.63 IP from 84ASF/Z	≤111 YK.	≤463	-111	-466	77PED/RYL	696-79-7
OCH <sub>3</sub>	(8.6) IP is onset of phot	(113) coelectron b	(472) and.	-86	-358	*EST	61011-51-6
ОСН <sub>3</sub>	(8.7) IP is onset of phot	(115) coelectron b	(481) and.	-86	-358	*EST	29887-56-7

Table 1. Positive Ion Table - Continued

	Table .	1. Posit	ive Ion Tabl	e - Cont	inuea —————		
ION Neutral	Ionization potential	Δ <sub>f</sub> H( kcal/mo	Ion) i kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>14</sub> O <sub>2</sub> + H <sub>3</sub> C CH <sub>3</sub> O H <sub>3</sub> C CH <sub>3</sub>	8.9 IP is onset of phot	(139) toelectron	(583) band.	-66	-276	*EST	22431-90-9
C <sub>7</sub> H <sub>15</sub> <sup>+</sup> 1-C <sub>7</sub> H <sub>15</sub>	From appearance D[C-H] = 100.5 k		(766) measurements	4 (82MAC). <i>L</i>	15 A <sub>f</sub> H(Neutral) ba	*EST	
2-C <sub>7</sub> H <sub>15</sub>	(6.95) From appearance $\Delta_f H$ (Neutral) bas				- 8 P is Δ <sub>f</sub> H(Ion)	*EST ∆ <sub>f</sub> H(Neutral).	
(CH <sub>3</sub> ) <sub>2</sub> CCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH	3 From appearance	147 potential	615 measurement (	84LOS/HOI	ــ).		40626-78-6
(CH <sub>3</sub> ) <sub>2</sub> CCH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	From hydride tran Δ <sub>f</sub> H(tert-C <sub>4</sub> H <sub>9</sub> <sup>+</sup>			t determinat	ions relative to		35443-14-2
(C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> C	From hydride tran Δ <sub>f</sub> H(tert-C <sub>4</sub> H <sub>9</sub> <sup>+</sup>			t determinat	ions relative to		28013-53-8
(CH <sub>3</sub> ) <sub>3</sub> CC(CH <sub>3</sub> ) <sub>2</sub>	From hydride tran $\Delta_f H(\text{tert-C}_4 \text{H}_9^+)$			t determinati	ions relative to		24436-96-2
C <sub>7</sub> H <sub>15</sub> CIN <sup>+</sup>							
CH <sub>2</sub> CI H <sup>+</sup>	From proton affin PA = (227.6) kcal			omethyl-1-m	nethyl- (RN 4966	55-74-9).	
$C_7H_{15}N^+$ (E)- $C_2H_5C(N(CH_3)_2) = C$	HCH <sub>3</sub> (≤7.61) IP from 81MUL/P	(≤173) RE2.	(≤724)	-2	-10	*EST	32317-47-8
CH <sub>3</sub>	(7.63) IP from 82ROZ/H	(157) OU.	(658)	-19	<b>-</b> 78	*EST	671-36-3

Table 1.	Positive	Ion Table	_	Continued
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	Table	1. Positiv	ve Ion Tab	le - Contin	ıued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>7</sub> H <sub>15</sub> N <sup>+</sup>							
CH <sub>3</sub>	(7.76) IP from 82ROZ/F	(160) HOU.	(669)	-19	-80	•EST	695-35-2
CH <sub>3</sub>	(7.79) IP from 82ROZ/F	(161) HOU.	(672)	-19	-80	•EST	695-15-8
H <sub>3</sub> C N CH <sub>3</sub>	(7.93) IP from 82ROZ/F	(155) HOU.	(648)	-28	-117	*EST	766-17-6
CH <sub>3</sub> CH <sub>3</sub>	(8.05) IP from 82ROZ/F	(160) IOU.	(670)	-26	-107	•EST	1193-12-0
C <sub>7</sub> H <sub>15</sub> N <sub>2</sub> +							
(NH <sub>2</sub> ) H+	From proton affin PA = (231.8) kcal			clo[2.2.2]octane	(RN 6238-14-6	3).	
(N-CH <sub>3</sub> ) H+	From proton affin (84MAU/NEL). 1	-	-		tane (RN 6523-	29-1).	
С <sub>7</sub> H <sub>15</sub> O <sup>+</sup> (i-С <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> СОН	From proton affin 857. kJ/mol.	87 ity of (i-C <sub>3</sub> )	363 H <sub>7</sub> ) <sub>2</sub> CO (RN	565-80-0). PA	= 204.9 kcal/r	nol,	
C <sub>7</sub> H <sub>16</sub> <sup>+</sup> n-C <sub>7</sub> H <sub>16</sub>	9.92±0.05	184 194	770 811	-34.8±0.1	-187.5±0.5 -145.7±0.5	74SCO	142-82-5
	This value of IP fr determinations (76	_		iorium constant			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No		Neutral reference	CAS registry number
C <sub>7</sub> H <sub>16</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> NC(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	From proton affin PA = 236.4 kcal/n			)=CHCH <sub>3</sub>	(RN 78733-73-0).		
C <sub>7</sub> H <sub>16</sub> N <sub>2</sub> +·			**************************************				
NN(CH <sub>3</sub> ) <sub>2</sub>	(6.83) IP from 86RUM.	(170) See also: 84	(710) NEL.	12	51	*EST	49840-60-0
NC2H5 NC2H5	(≤8.06) See also: 84NEL.	(≤198)	(≤828)	12	50	*EST	22825-58-7
CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.2) IP is onset of phot	(196) oelectron ba	(822) and (82WOR/H <i>A</i>	30 AR).	127	•EST	33709-65-8
С <sub>7</sub> H <sub>16</sub> O <sup>+</sup> п-С <sub>7</sub> H <sub>15</sub> OH	(9.84±0.03) IP from 77ASH/B	(147) UR.	(614)	-80.2±0.4	-335.5±1.5	77PED/RYL	111-70-6
сн <sub>3</sub> (сн <sub>2)4</sub> снонсн <sub>3</sub>	(9.70±0.03) IP from 77ASH/B	(139) UR.	(582)	-85	-354	84WIB/WAS	543-49-7
СН <sub>3</sub> (СН <sub>2</sub> ) <sub>3</sub> СНОНСН <sub>2</sub> СН	H <sub>3</sub> 9.68±0.03 IP from 77ASH/B	139 UR.	580	-85	-354	84WIB/WAS	589-82-2
СН <sub>3</sub> (СН <sub>2</sub> ) <sub>2</sub> СНОН(СН <sub>2</sub> ) <sub>2</sub>	CH <sub>3</sub> (9.61±0.03) IP from 77ASH/BU	(137) UR.	(573)	-85	-354	84WIB/WAS	589-55-9
n-C <sub>5</sub> H <sub>11</sub> OC <sub>2</sub> H <sub>5</sub>	(≤9.49) IP from 80BAC/M		(≤602)	<b>-75</b>	-314	•EST	17952-11-3
(i-C <sub>3</sub> H <sub>7</sub> )O(t-C <sub>4</sub> H <sub>9</sub> )	(≤9.20) IP from 79AUE/Be cited vertical value	OW. Autho			-339 s lower than	*EST	17348-59-3

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
С <sub>7</sub> H <sub>16</sub> O <sub>2</sub> + n-С <sub>7</sub> H <sub>15</sub> ООН	(9.48±0.03) IP from 77ASH/I	(150) BUR.	(626)	-69	-289	*EST	764-81-8			
n-C <sub>5</sub> H <sub>11</sub> CH(CH <sub>3</sub> )OOH	(9.30±0.03) IP from 77ASH/I	(148) BUR.	(621)	-66	-276	*EST	762-46-9			
C <sub>7</sub> H <sub>17</sub> N <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (n-C <sub>3</sub> H <sub>7</sub> )N	(7.67) IP from 79AUE/ of tertiary amine						4458-31-5			
C <sub>7</sub> H <sub>17</sub> O <sup>+</sup> (i-C <sub>3</sub> H <sub>7</sub> )OH(t-C <sub>4</sub> H <sub>9</sub> )	From proton affi (874.) kJ/mol.	(76) nity of (i-C <sub>3</sub> 1	(317) H <sub>7</sub> )O(t-C <sub>4</sub> H <sub>9</sub> )	(RN 17348-59	9-3). PA = (3	208.8) kcal/mol,				
С <sub>7</sub> H <sub>17</sub> O <sub>2</sub> + СН <sub>3</sub> OH(СН <sub>2</sub> ) <sub>5</sub> OCH <sub>3</sub>	From proton affir 928. kJ/mol.	40 nity of CH <sub>3</sub> C	167 D(CH <sub>2</sub> )5OCH <sub>3</sub>	(RN 111-89-	7). PA = 221	.8 kcal/mol,				
C <sub>7</sub> H <sub>18</sub> N <sup>+</sup> n-C <sub>7</sub> H <sub>15</sub> NH <sub>3</sub>	From proton affii 916. kJ/mol.	111 nity of n-C <sub>7</sub> I	463 H <sub>15</sub> NH <sub>2</sub> (RN 1	11-68-2). PA	= 219.0 kcal/	mol,				
(CH <sub>3</sub> ) <sub>2</sub> (neo-C <sub>5</sub> H <sub>11</sub> )NH	From proton affii 962. kJ/mol.	108 nity of (CH <sub>3</sub> )	450 ) <sub>2</sub> (neo-C <sub>5</sub> H <sub>11</sub> )	N (RN 10076	-31-0). PA =	229.9 kcal/mol,				
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (n-C <sub>3</sub> H <sub>7</sub> )NH	From proton affir	(106) nity of (C <sub>2</sub> H <sub>2</sub>	(445) <sub>5</sub> ) <sub>2</sub> (n-C <sub>3</sub> H <sub>7</sub> )N	(RN 4458-31-	5). PA = (23	2.0) kcal/mol,				
C <sub>7</sub> H <sub>18</sub> N <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> N(CH <sub>2</sub> ) <sub>3</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(7.6) IP is onset of pho	(168) toelectron sp	(704) pectrum (81LIV	-7 7/ROB).	-29	*EST	110-95-2			
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NN(CH <sub>3</sub> )(C <sub>2</sub> H <sub>5</sub> )	(8.02) Reported values of usually significant geometry change	ly higher tha	in the adiabatic	value because	e of the large		50599-43-4			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	$\Delta_{\mathbf{f}}H(Ne$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>7</sub> H <sub>18</sub> N <sub>2</sub> + (n-C <sub>4</sub> H <sub>9</sub> )(CH <sub>3</sub> )NN(CH <sub>3</sub> ) <sub>2</sub>	(6.63)	(156)	(652)	3	12	*EST	52598-10-4
	IP from charge tra See also: 80NEL/I	ansfer equili	brium constar				
(t-C <sub>4</sub> H <sub>9</sub> )(CH <sub>3</sub> )NN(CH <sub>3</sub> ) <sub>2</sub>							
	(6.80) IP from charge tra	(159) ansfer equili	(667) brium constan	3 at determinatio	11 n (84MAU/N	*EST IEL).	60678-73-1
C <sub>7</sub> H <sub>18</sub> Si <sup>+</sup>			,				
(CH <sub>3</sub> ) <sub>3</sub> CSi(CH <sub>3</sub> ) <sub>3</sub>	(9.34±0.06)	(170)	(713)	<b>-45</b>	-188	72TRI/ALL	5037-65-0
C <sub>7</sub> H <sub>18</sub> Si <sub>2</sub> + CH <sub>2</sub> =CHSi(CH <sub>3</sub> ) <sub>2</sub> Si(CH <sub>3</sub> :	)3						
2 . 32 . 3	(≤8.56) IP from 81KHV/Z		(≤577)	-60	<b>-2</b> 49	*EST	1112-06-7
C <sub>7</sub> H <sub>18</sub> Sn <sup>+</sup>			·				
(C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> (CH <sub>3</sub> )Sn	(≤8.95)	(≤152)	(≤638)	-54±1	-226±4	80TEL/RAB	2097-60-1
(CH <sub>3</sub> ) <sub>3</sub> (tert-C <sub>4</sub> H <sub>9</sub> )Sn	(8.0)	(168)	(705)	−16±1	-67±6	77PED/RYL	3531-47-3
	IP is onset of phot	• •					
C <sub>7</sub> H <sub>19</sub> NSi <sup>+</sup>							·
$(CH_3)_3SiN(C_2H_5)_2$	(7.68)	(97)	(406)	-80±2	-335±8	80TEL/RAB	996-50-9
	IP from 83MOL/P		(400)	5012	55510	OUILLATOR	))U-3U-)
C <sub>7</sub> H <sub>19</sub> N <sub>2</sub> +							
H <sub>3</sub> N(CH <sub>2</sub> ) <sub>7</sub> NH <sub>2</sub>	From proton affin 996. kJ/mol.	100 ity of H <sub>2</sub> N(	419 CH <sub>2</sub> ) <sub>7</sub> NH <sub>2</sub> (R	LN 646-19-5).   I	°A = 238. kca	al/mol,	
(CH <sub>3</sub> ) <sub>2</sub> NH(CH <sub>2</sub> ) <sub>3</sub> N(CH <sub>3</sub> ) <sub>2</sub>	<u>.</u>						
	From proton affin 1017. kJ/mol.	116 ity of (CH <sub>3</sub> )	484 <sub>2</sub> N(CH <sub>2</sub> ) <sub>3</sub> N(	CH <sub>3</sub> ) <sub>2</sub> (RN 11	0-95-2). PA :	= 243. kcal/mol,	
(n-C <sub>4</sub> H <sub>9</sub> )(CH <sub>3</sub> )NHN(CH <sub>3</sub> )	2						
	From proton affin PA = 230.0 kcal/n			(CH <sub>3</sub> ) <sub>2</sub> (RN 52	2598-10-4). (8	4MAU/NEL).	
(t-C <sub>4</sub> H <sub>9</sub> (CH <sub>3</sub> )NHN(CH <sub>3</sub> ) <sub>2</sub>							
	From proton affini PA = 229.3 kcal/n	•	-	CH <sub>3</sub> ) <sub>2</sub> (RN 60	678-73-1). (84	MAU/NEL).	

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	ued 		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>7</sub> H <sub>20</sub> NSi <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> Si(CH <sub>2</sub> ) <sub>2</sub> NH(CH <sub>3</sub> )	Prom proton affir PA = 231.8 kcal/t			CH <sub>3</sub> ) <sub>2</sub> (RN 2	3138-94-5). (84M	IAU/NEL).	
C8C02O8 + C C0 C0 C0 C0	(8.12±0.22)	(-96)	(-402)	-283±2	-1185±8	82PIL/SKI	10210-68-1
C8F12M02O8+  CF3-C	8.07  3 IP is onset of photos	(-818)	(-3421) band (82BAN/P	-1004 EL).	-4200	*EST	36608-07-8
C <sub>8</sub> F <sub>18</sub> O <sup>+</sup> (n-C <sub>4</sub> F <sub>9</sub> ) <sub>2</sub> O	12.68 IP from 83MOL/F	-658.5 PIK.	-2755.2	-950.9±1	−3978.6±3	77PED/RYL	308-48-5
C <sub>8</sub> H <sub>2</sub> + CH=CC=CC=CC=CH	(9.09±0.02)	(416)	(1741)	207	864	*EST	6165-96-4
C8H3F5+  F CH=CH2  F F	(9.18±0.02)	(35)	(145)	-177	<b>-741</b>	*EST	653-34-9
C <sub>8</sub> H <sub>4</sub> Cl <sub>2</sub> OS <sup>+</sup>	≤9.00 IP from 82BEN/D	(≤205) UR.	(≤857)	-3	-11	*EST	30834-33-4
C <sub>8</sub> H <sub>4</sub> F <sub>6</sub> <sup>+</sup> CF <sub>3</sub> CF <sub>3</sub>	10.57 IP from 82CAB/C	(-61) OW.	(-255)	-305	-1275	*EST	402-31-3

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) I kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>4</sub> N <sub>2</sub> + CN CN	9.9 IP is onset of phot	(316) coelectron	(1323) band.	88±0.5	368±2	80SAT/SAK	91-15-6
CN	10.2 IP is onset of phot	(322) soelectron	(1347) band.	87±0.5	363±2	80SAT/SAK	626-17-5
NC CN	10.10	318	1331	85±0.5	357±2	80SAT/SAK	623-26-7
С <sub>8</sub> H <sub>4</sub> O <sub>2</sub> +	≤9.23	(≤237)	(≤992)	24	101	•EST	6383-11-5
C <sub>8</sub> H <sub>4</sub> O <sub>3</sub> +	(10.0) IP is onset of phot	(142) coelectron	(594) band.	-89±0.5	−371±2	77PED/RYL	85-44-9
C <sub>8</sub> H <sub>5</sub> BrOS +	≤9.10 IP from 82BEN/D	(≤225) UR.	(≤941)	15	63	*EST	57147-27-0
S <sub>S</sub>	≤8.95 IP from 82BEN/D	(≤221) UR.	(≤927)	15	63	*EST	57147-26-9

Table 1. Positive Ion Table - Continued

Table 1. Positive foil Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol		Veutral) ol kJ/mol	Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>5</sub> BrO <sub>2</sub> S <sup>+</sup>										
S=0	≤9.10 IP from 82BEN/I	(≤171) )UR.	(≤715)	-39	-163	*EST	5350-05-0			
S=0	≤9.40 IP from 82BEN/E	(≤178) )UR.	(≤744)	-39	-163	•EST	16957-97-4			
C <sub>8</sub> H <sub>5</sub> Cl <sup>+</sup>										
CICH	(8.6) IP is onset of phot	(264) coelectron	(1104) band.	65	274	*EST	873-73-4			
C <sub>8</sub> H <sub>5</sub> ClOS <sup>+</sup>				<del>*************************************</del>						
C' SCO	≤9.10 IP from 82BEN/D	(≤212) UR.	(≤888)	2	10	*EST	57147-28-1			
OT S	≤8.95 IP from 82BEN/D	(≤209) UR.	(≤874)	2	10	*EST	63724-95-8			
C <sub>8</sub> H <sub>5</sub> ClO <sub>2</sub> S +										
CI	≤9.25 IP from 82BEN/D	(≤162) UR.	(≤676)	-52	-216	*EST	10133-41-2			
CI	≤9.45 IP from 82BEN/D	(≤166) UR.	( <b>≤</b> 696)	-52	-216	*EST	21211-29-0			
	——————————————————————————————————————		***********		****					

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>5</sub> F <sub>3</sub> O +	(9.72) IP from 79MCL/I	(61) TRA.	(256)	-163	-682	*EST	434-45-7			
C8H5MnO3 <sup>+</sup> ·	(7.6) IP is onset of phot	(61) coelectron t	(257) pand (81CAL/HU	−114±2 ′B). See alsc	-476±8 o: 86LIC/KEL.	77PED/RYL	12079-65-1			
C <sub>8</sub> H <sub>5</sub> NO +	≤10.10 IP from 85GAL/C	(≤258) BER.	(≤1081)	25	107	*EST	105-07-7			
С <sub>8</sub> H <sub>5</sub> NO <sub>2</sub> +	(10.0) IP from 84TOB/T	(193) AJ.	(807)	-38	-158	*EST	619-65-8			
C <sub>8</sub> H <sub>6</sub> <sup>+</sup> (E),(E)-HC=CCH = CHC	H = CHC≖CH (7.8) IP from 74KOP/S	(278) CH.	(1161)	98	409	*EST	53477-04-6			
C=CH	8.81±0.04 See also: 80BOC/a	276 AYG, 74K0	1156 OP/SCH, 81ELB/	73±0.5 LIE.	306±2	85DAV/ALL	536-74-3			
	(≤7.5) IP is onset of phot	(≤291) coelectron	(≤1218) band.	118	494	85DEW/MER	4026-23-7			
C <sub>8</sub> H <sub>6</sub> Br <sub>2</sub> <sup>+</sup>	(9.0) IP is onset of phot	(358) coelectron t	(1496) pand (85HON/HE	150 EI).	628	*EST	59346-70-2			

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mol	ion) kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry			
C <sub>8</sub> H <sub>6</sub> Cl <sup>+</sup>										
CI C= CH <sub>2</sub>	From proton affir PA = 196.1 kcal/i			RN 766-83-6).	(85MAR/MO	D).				
CI C=CH <sub>2</sub>	From proton affin PA = 199.4 kcal/r			RN 873-73-4).	(85MAR/MO	D).				
C <sub>8</sub> H <sub>6</sub> CIN <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·					
CI CH2-CE N	(9.48±0.05)	(256)	(1071)	37	156	*EST				
CI CH3-CEN	(9.43±0.05)	(255)	(1066)	37	156	*EST				
C <sub>8</sub> H <sub>6</sub> Cl <sub>2</sub> +							·			
Cı	(9.15) IP is onset of photo	(337) oelectron b	(1411) eand (85HON)	126 HEI).	528	•EST				
C <sub>8</sub> H <sub>6</sub> F +	, , , , , , , , , , , , , , , , , , , ,	<del></del>								
F C=CH <sub>2</sub>	From proton affini PA = 195.4 kcal/m			N 2561-17-3).	(85MAR/MO	D).				
F C=CH₂	From proton affini PA = 200.8 kcal/m			N 766-98-3). (8	35MAR/MOD	).				
		<del> </del>								

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(	Ion) l kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number		
С <sub>8</sub> H <sub>6</sub> F <sub>3</sub> O + снон	From proton affii 799. kJ/mol.	2 nity of 4-C	10 F <sub>3</sub> C <sub>6</sub> H <sub>4</sub> CHO (R	LN 455-19-6).	. PA = 191.9 ke	cal/mol,			
C <sub>8</sub> H <sub>6</sub> I <sub>2</sub> +	(8.7) IP is onset of pho	(379) toelectron	(1587) band (85HON/I	179 HEI).	748	*EST			
C <sub>8</sub> H <sub>6</sub> NO <sup>+</sup>									
(NC CHO) H	From proton affir 782. kJ/mol.	204 nity of 4-(C	855 :N)C <sub>6</sub> H <sub>4</sub> CHO (1	RN 105-07-7	). PA = 187.0 k	cal/mol,			
C <sub>8</sub> H <sub>6</sub> N <sub>2</sub> +	(8.2) IP is onset of pho	(270) toelectron	(1129) band.	81±2	338±10	*EST	253-66-7		
	(8.8) IP is onset of pho	(267) toelectron	(1116) band.	64	267	*EST	254-79-5		
	(9.0) IP is onset of pho	(271) toelectron	(1135) band.	64	267	*EST	253-72-5		
	(8.99) IP is onset of phot	(271) coelectron	(1134) band.	64	267	•est	253-69-0		
	(8.8)	(267)	(1116)	64	267	•EST	254-60-4		

Table 1. Positive Ion Table - Continued

Table 1. Positive foil Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry		
C <sub>8</sub> H <sub>6</sub> N <sub>2</sub> +						· · · · · · · · · · · · · · · · · · ·			
	(8.4) IP is onset of phot	(274) coelectron b	(1148) pand.	81	338	*EST	253-52-1		
	(≤8.8) IP is onset of phot	(267) oelectron b	(1116) and.	64	267	*EST	253-50-9		
	(8.8) IP is onset of phot	(267) oelectron b	(1116) and.	64	267	*EST	253-45-2		
	9.00±0.02	(269)	(1125)	61	257	*EST	253-82-7		
	9.01±0.02	271	1131	63±1	262±4	81STE/BAR	91-19-0		
		<del></del>							
C <sub>8</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> +	(10.11±0.04)	(274)	(1146)	41±1	171±4	*EST	555-21-5		
C <sub>8</sub> H <sub>6</sub> N <sub>2</sub> Se <sup>+</sup>							· · · · · · · · · · · · · · · · · · ·		
C-N HC <sub>Se</sub> N	(8.1) IP is onset of photo	(295) pelectron b	(1234) and (80BOC/AY	108.1±2 G).	452.3±8	73ARS/SHA	25660-64-4		
C <sub>8</sub> H <sub>6</sub> N <sub>4</sub> +				<del></del>					
	(8.3) IP is onset of photo	(293) pelectron ba	(1227) and (82BAR/CAU	102 J).	426	*EST	34671-83-5		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry			
C <sub>8</sub> H <sub>6</sub> O <sub>2</sub> S +	(9.1) IP is onset of pho	(166) toelectron t	(694) pand (82BEN/D	-44 UR).	-184	*EST	825-44-5			
С <sub>8</sub> Н <sub>6</sub> О <sub>4</sub> + соон соон	(9.98±0.2)	(64)	(267)	-166±0.5	-696±2	77PED/RYL	121-91-5			
ноос	(9.86±0.2)	(55)	(233)	-172±0.7	-718±3	77PED/RYL	100-21-0			
C <sub>8</sub> H <sub>6</sub> S <sup>+</sup>	8.13±0.015	227	950	40±0.2	166±1	79SAB	95-15-8			
₩ S	(7.75)	(228)	(954)	49	206	*EST	270-82-6			
C <sub>8</sub> H <sub>6</sub> S <sub>2</sub> +	(7.99)	(243)	(1017)	59	246	*EST	3172-56-3			
C <sub>8</sub> H <sub>7</sub> +										
Ċ=СH <sub>2</sub>	From proton affin PA = 200.2 kcal/r			74-3). (85M <i>a</i>	AR/MOD).					

Table 1. Positive Ion Table - Continued

	Table 1. Toslave for Table - Continued									
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>6</sub> N <sub>4</sub> +										
	(9.0) IP is onset of pho	(309) stoelectron b	(1294) and (82BAR/CA	102 AU).	426	*EST	2426-94-0			
$N \bigcirc N \longrightarrow \bigcirc N$	(9.0) IP is onset of pho	(306) toelectron b	(1278) and (82BAR/CA	98 AU).	410	*EST	28648-89-7			
	(9.0) IP is onset of pho	(306) toelectron b	(1278) and (82BAR/CA	98 .U).	410	*EST	56598-46-0			
C <sub>8</sub> H <sub>6</sub> O +										
CH=C=0	(≤8.17)	(≤194)	(≤813)	6	25	80DEM/WUL	3496-32-0			
O-CECH	(8.7)	(266)	(1113)	65	274	*EST	4279-76-9			
	8.37±0.015	199	833	6±2	26±10	77PED/RYL	271-89-6			
C <sub>8</sub> H <sub>6</sub> O <sub>2</sub> +										
онс Сно	(10.13±0.01)	(196)	(820)	-37.6±2	-157±8	*EST	623-27-8			
	(9.64) IP is onset of photo		(927) nd (85GLE/JAH	-1 I).	-3	*EST	77627-49-7			



Table 1 Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>8</sub> H <sub>7</sub> Br <sup>+</sup>	(8.76) IP is onset of pho	(351) toelectron b	(1470) and (85HON/HE	149 EI, 84ABE/I	625 DEL).	*EST	59346-69-9 Duplicakd see p 304		
C8H7ClHg+	8.3 IP is onset of pho	(232) toelectron b	(971) and (81BAI/CHI	41 ().	170	•EST	36525-03-8		
CI CH3	(9.51±0.1)	(191)	(801)	-28±2	-117±8	*EST	99-02-5		
сі С-снз	(8.9) IP is onset of pho	(177) toelectron b	(742) and. See also: 85	-28±2 GGAL/GER	–117±8 , 82PFI/GER	*EST ,77ROS/DRA.	99-91-2		
C <sub>8</sub> H <sub>7</sub> FO <sup>+</sup>	(9.76±0.1)	(158)	(662)	-67±2	-280±8	*EST	455-36-7		
F CH3	(9.57±0.2)	(154)	(643)	-67±2	-280±8	*est	403-42-9		
C <sub>8</sub> H <sub>7</sub> I +	(8.6) IP is onset of pho	(362) toelectron b	(1515) and (84ABE/DE	164 EL).	685	*EST	74725-77-2		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>7</sub> N <sup>+</sup>							
CH3-CM	(9.34)	(260)	(1087)	44.5	186	*EST	140-29-4
CN CH3	9.38	(259)	(1083)	43	178	*EST	529-19-1
CN CH3	9.34	(259)	(1084)	44	183	*EST	620-22-4
CH <sub>3</sub>	9.32	(258)	(1081)	44	182	•EST	104-85-8
	7.761±0.001 IP from 85HAG/I	216 VA. See alse	906 o: 79COR.	38±1	157±5	77PED/RYL	120-72-9
	7.26	243	1015	75.2	314.6	79COR	274-40-8
CN	(≤9.26) IP from 83HOU/R		(≤1265)	89	372	•EST	39863-20-2
C <sub>8</sub> H <sub>7</sub> NO <sup>+</sup>							
н₃соСм	(8.6) IP is onset of photo		(892) and (81MOD/DIS	15 6).	62	*EST	874-90-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>7</sub> NO <sup>+</sup>										
	(6.95) IP is onset of photon	(182) toelectron b	(760) and (81GAL/KL	21 .A).	89	*EST	63122-43-0			
C <sub>8</sub> H <sub>7</sub> NO <sub>3</sub> +										
о <sub>2</sub> NСН <sub>3</sub>	≤9.98 IP from 85GAL/C	(≤206) GER.	(≤861)	<b>24</b>	-102	*EST	100-19-6			
C <sub>8</sub> H <sub>7</sub> NS <sup>+</sup>			******	-						
	(7.1) IP is onset of photo	(221) toelectron b	(924) pand (81GAL/KL	57 A).	239	*EST	52707-46-7			
C <sub>8</sub> H <sub>7</sub> N <sub>2</sub> +										
( ( ) H	+ From proton affin 934. kJ/mol.	(223) Lity of cinno	(934) line (RN 253-66-	7). PA = 23	23.2 kcal/mol,					
	From proton affin 897. kJ/mol.	(214) uity of quinc	(895) oxaline (RN 91-19	-0). PA = :	214.4 kcal/mol,					
C <sub>8</sub> H <sub>8</sub> +						<u></u>				
	8.01±0.04 See also: 78FU/D	256 UN.	1070	71.1±0.3	297.6±1.3	77PED/RYL	629-20-9			
	(8.5) IP is onset of pho	(287) toelectron t	(1201) pand (85MEI/KO	91 N).	381	85KOL/MEI				
	(8.2) IP is onset of pho	(281) toelectron b	(1176) pand (85MEI/KO	92 N).	385	85KOL/MEI	68344-46-7			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$		Δ <sub>f</sub> H(Net		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>8</sub> H <sub>8</sub> + ≡	(8.9)	(321)	(1346)	116	487	78LEU/WIR	49852-40-6
H <sub>2</sub> C=	(7.5) H <sub>2</sub> IP is onset of phot	(221) oelectron b	(927) and. See also	48±4 : 82DEW.	203±17	81POL/RAI	502-86-3
(СН <u>+</u> СН <sub>2</sub>	8.43±0.06 IP from 78FU/DU	230 IN, 81KIM/I	961 KAT.	35.3±0.2	147.7±0.7	77PED/RYL	100-42-5
	(≤8.66±0.03)	(≤248)	(≤1037)	48±1	201±4	81ROT/SCH	694-87-1
	8.23 See also: 82HAS/N	263 NEU, 83GL	1100 E/BOH.	73	306	76ALL	500-24-3
=CH <sub>2</sub>	(8.5) IP is onset of photo	(274) oelectron ba	(1145) and. See also	78 : 85MAR/MAY.	325	*EST	37846-63-2
	(8.5) Values for this IP of 8.56 eV (83LIF/EA			149±1 A), 8.46 (82LEV	622±4 //LIA) and	77PED/RYL	277-10-1
	(8.18)	(285)	(1189)	96	400	81GOD/SCH	20656-23-9

Table 1. Positive Ion Table - Continued

TOM										
ION Neutral	Ionization potential eV	$\Delta_{\mathbf{f}}H(\mathbf{I})$ kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>8</sub> Br <sup>+</sup>										
Вг Сн-сн3	199 831 From proton affinity of 3-BrC <sub>6</sub> H <sub>4</sub> CH = CH <sub>2</sub> (RN 2039-86-3) (84HAR/HOU). PA = 197.4 kcal/mol, 826. kJ/mol.									
Br CH-CH₃	From proton affin PA = 201.3 kcal/t			<sub>2</sub> (RN 2039-82 -	-9) (84HAR	/HOU).				
C <sub>8</sub> H <sub>8</sub> ClN <sup>+</sup>					<del>,</del>					
N CI	≤8.3 IP from 82CRI/LI	(≤255) IC.	(≤1067)	64	266	*EST	28192-05-4			
C <sub>8</sub> H <sub>8</sub> FN <sup>+</sup>										
DN F	(≤8.2) IP from 82CRI/LI	(≤213) C.	(≤890)	24	99	*EST	698-53-3			
C <sub>8</sub> H <sub>8</sub> N <sub>2</sub> O <sub>2</sub> +										
DN NO2	(≤8.9) IP from 82CRI/LI	(≤273) ·C.	(≤1142)	68	283	*EST	30855-79-9			
C <sub>8</sub> H <sub>8</sub> N <sub>4</sub> +			· #*;500, ·							
ON CH3	(≤8.9) IP from 84GLE/S	(≤275) PA2.	(≤1151)	70	292	•EST	6499-39-4			
C <sub>8</sub> H <sub>8</sub> O +										
CH <sub>2</sub> CHO	(8.80) See also: 81DAL/1	(190) NIB.	(796)	-13	-53	*EST	122-78-1			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>8</sub> H <sub>8</sub> O +	•		KJ/IIIOI	KCAI/IIIOI	KJ/IIIOI		number
н3с	9.33±0.05 See also: 85GAL/	(197) /GER.	(825)	-18	-75	*EST	104-87-0
C-CH <sub>3</sub>	9.29±0.03 See also: 81DAL/	194 NIB, 79MC	810 L/TRA, 85GAL		–86.6±1.5 N/FRA, 82PFI/C	77PED/RYL ER.	98-86-2
OH C≈CH₂	Δ <sub>f</sub> H(Ion) from ap	(175) opearance po	(731) otential determin	nation (81D <i>a</i>	AL/NIB).		4383-15-7
CH==CHOH	(8.71±0.1) IP from 81DAL/N	(194) IIB.	(812)	-7	-28	*EST	4365-04-2
	(7.65) IP is onset of phot	(163) oelectron ba	(683) and (81BAK/AR	–13 LM). See also	-55 o: 82LEV/LIA.	*EST	496-16-2
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> +							
но С сн3	(8.67±0.05)	(137)	(573)	-63±2	-264±8	*EST	
HO CH3	(8.70±0.03)	(138)	(575)	-63±2	−264±8	*EST	
—сн <sub>2</sub> соон	(8.26) IP is onset of photo		(478) ind (83KLA/KO)		-319 81MEE/WAH.	*EST	103-82-2

Table 1. Positive Ion Table - Continued

	Table.	l. Positiv	e Ion Table -	Contin	uea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Nekal/mol		Neutral reference	CAS registry number
С <sub>8</sub> H <sub>8</sub> O <sub>2</sub> + СН <sub>3</sub> — СООН	(9.1) IP from 81MEE/V	(133) VAH.	(558)	−76.5±0.2	-320±1	76COL/JIM	118-90-1
соон	(9.43±0.2) See also: 81MEE/	(139) WAH.	(581)	−79±0.2	-329±1	76COL/JIM	99-04-7
нзс Соон	(9.23±0.2) See also: 81MEE/	(134) WAH.	(558)	−79±0.2	-332±1	76COL/JIM	99-94-5
O C CH3	(8.6±0.05)	(131)	(550)	-66.8±0.3	-279.7±1.1	77PED/RYL	122-79-2
€ соосн3	9.32±0.03 IP from 79MCL/1	146 TRA. See al	611 so: 81MEE/WAH	-69±2 , 82CAB/C	–288±7 OW.	77PED/RYL	93-58-3
н <sub>3</sub> со Сно	(8.43) See also: 85GAL/	(145) GER.	(610)	-49±1	-203±5	77PED/RYL	123-11-5
сн <sub>3</sub>	9.58	(176)	(737)	-45	-187	•EST	137-18-8
	(9.3) IP is onset of pho	(218) toelectron b	(910) pand 85GLE/JAH	3 .	13	*EST	77627-56-6

Table 1. Positive Ion Table - Continued

*******	Table	1. 1 05111	ve ion table	- Conun	ucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	ion) l kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> + O O O O O O O O O O O O O O O O O O	(8.1) IP is onset of pho	(160) toelectron	(669) band.	-27	-113	*EST	60526-48-9
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> Si <sup>+</sup>	(8.2) IP is onset of pho	(178) toelectron	(743) band (83ZYK/E	-11 RC).	<b>~</b> 48	*EST	87027-12-1
С <sub>8</sub> H <sub>8</sub> О <sub>3</sub> + соон осн <sub>3</sub>	(9.06±0.2)	(102)	(428)	−107±0.2	-446±1	78COL/JIM	586-38-9
нзсо Соон	(9.04±0.2)	(100)	(420)	-108±0.2	-452±1	78COL/JIM	100-09-4
H <sub>3</sub> C + 0	(8.4) IP is onset of photo	(80) oelectron b	(334) pand (81BEC/H	–114 OF).	-476	*EST	81640-32-6
C <sub>8</sub> H <sub>8</sub> S <sub>2</sub> +			····· - · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
©(s)	(≤7.91) IP from 82BRE/SC	(≤219) CH.	( <b>≤</b> 916)	37	153	*EST	6247-55-8
C <sub>8</sub> H <sub>8</sub> S <sub>4</sub> <sup>+</sup>				· · · · · · · · · · · · · · · · · · ·			
C <sub>8</sub> H <sub>8</sub> S <sub>4</sub> <sup>+</sup>	(7.5) IP is onset of photo	(246) pelectron b	(1032) and (83BOC/R0	74 OT).	308	*EST	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(Iα		$\Delta_{\mathbf{f}}H(\mathbf{N})$		Neutral	CAS registry
Neutral C XX +	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
С8Н9+	(6.9) $\Delta_f H(\text{Ion})$ from p and from hydride IP is $\Delta_f H(\text{Ion})$ - $A_f H(\text{Ion})$	transfer equ	uilibrium consta				2348-51-8
Сн3.	7.07 IP from 86HAY/. Δ <sub>f</sub> H(2-CH <sub>3</sub> C <sub>6</sub> H <sub>e</sub>					86HAY/KRU ants (85SHA/SHA	2348-48-3 \).
н <sub>3</sub> с С с н <sub>2</sub>	7.12 IP from 86HAY/1 Δ <sub>f</sub> H(3-CH <sub>3</sub> C <sub>6</sub> H <sub>2</sub>					86HAY/KRU ants (85SHA/SHA	2348-47-2 \);
H <sub>3</sub> C CH <sub>Z</sub>	6.96 IP from 86HAY/I Δ <sub>f</sub> H(4-CH <sub>3</sub> C <sub>6</sub> H <sub>2</sub>				-	86HAY/KRU ants (85SHA/SHA	2348-52-9 s);
C <sub>8</sub> H <sub>9</sub> Cl <sup>+</sup> CH <sub>2</sub> Cl CH <sub>3</sub>	(8.82±0.03)	(200)	(835)	-4	-16	*EST	620-19-9
H3C CH2CI	(8.79±0.03)	(199)	(832)	<b>-4</b>	-16	*EST	104-82-5
C <sub>8</sub> H <sub>9</sub> N <sup>+</sup> C <sub>8</sub> H <sub>9</sub> N <sup>+</sup> CH <sub>3</sub>	8.77	(246)	(1031)	44±2	185±10	*EST	622-29-7
	(8.0) IP from 82ROZ/F	(256) 1OU2, 82CR	(1070) LI/LIC.	71	298	*EST	696-18-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry
С <sub>8</sub> н <sub>9</sub> N+	(7.15±0.02)	(212)	(888)	47	198	*EST	496-15-1
	≤9.15 IP from 79AUE/I of pyridines: 234 I					•EST nities	
	≤9.19 IP from (79AUE/ affinities of pyridi					*EST EV.	
C <sub>8</sub> H <sub>9</sub> NO <sup>+</sup>	(7.28)	(212)	(888)	44	186	•EST	65194-06-1
C-N-CH3	7.89	(207)	(866)	25	105	*EST	3376-23-6
H-c-CH3	(8.30) Values reported fo	(161) or this ioniza	(672) ation potential ra	-31±0.2 ange from 8.	-129±1 18 eV to 8.60 eV.	77PED/RYL	103-84-4
H <sub>Z</sub> N	(7.8±0.1) See also: 85GAL/0	(159) GER.	(666)	-21	-87	•EST	99-92-3
C8H9NOS+	(8.2) IP is onset of phot	(166) coelectron ba	(695) and (82LOU/VA	-23 .N).	<del>-</del> 96	*EST	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>9</sub> NO <sub>2</sub> +	(7.3) IP is onset of phot	(99)	(412)	-70	-292	*EST	10541-83-0
CH3HN .	(7.7) IP is onset of phot	(109)	(455)	-69	-288	*EST	619-45-4
H <sub>3</sub> C CH <sub>3</sub>	9.17±0.015	(221)	(925)	10	40	*EST	81-20-9
H <sub>3</sub> C NO <sub>2</sub>	(9.1) IP is onset of phot	(215) coelectron b	(898) and.	5	20	*EST	89-87-2
C <sub>2</sub> H <sub>5</sub> NO <sub>2</sub>	(9.39) IP from 82BAL/C	(219) AR.	(917)	3±2	11±7	77PED/RYL	612-22-6
C <sub>2</sub> H <sub>5</sub>	(9.64) IP from 82BAL/C	(224) AR.	(937)	2	7	*EST	7369-50-8
0 <sub>2</sub> N	(9.71) IP from 82BAL/C	(225) AR.	(943)	2±2	7±7	77PED/RYL	100-12-9

C<sub>8</sub>H<sub>9</sub>N<sub>2</sub>+

O H<sub>3</sub>

204 852

From proton affinity of 1-methyl-1H-indazole (RN 13436-48-1) (84FLA/MAQ). PA = (221) kcal/mol, (925) kJ/mol.

Table 1.	<b>Positive</b>	Ion Table	_	Continued

	Table	1. Posi	tive Ion Tabl	e - Conti	nued		
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	•	Veutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>9</sub> N <sub>2</sub> +							
N-CH <sub>3</sub>	From proton affir PA = (224) kcal/s			ole (RN 4838-	-00-0) (84FL.A	√MAQ).	
C <sub>8</sub> H <sub>9</sub> O +		· · · · · · · · · · · · · · · · · · ·	,				
нзс снон	From proton affir 852. kJ/mol.	144 hity of 4-(1	603 СН <sub>3</sub> )С <sub>6</sub> Н <sub>4</sub> СНО	O (RN 104-87-	.0). PA = 203	3.7 kcal/mol,	
OH CH3	From proton affin	140 uity of C <sub>6</sub> 1	584 H <sub>5</sub> COCH <sub>3</sub> (RN	198-86-2). PA	. = 205.4 kcal	/mol, 859. kJ/mol.	
C <sub>8</sub> H <sub>9</sub> O <sub>2</sub> +		<u>-</u>	•				
нзсо снон	From proton affin 893. kJ/mol.	104 ity of 4-((	434 CH <sub>3</sub> O)C <sub>6</sub> H <sub>4</sub> CF	HO (RN 123-1	1-5). PA = 2	213.5 kcal/mol,	
C OCH3	From proton affin 852. kJ/mol.	94 ity of C <sub>6</sub> 1	395 H <sub>5</sub> COOCH <sub>3</sub> (R	.N 93-58-3). P	*A = 203.7 kc	eal∕mol,	
C <sub>8</sub> H <sub>10</sub> +			·			<u> </u>	
(E)-CH <sub>2</sub> = CHCH = CHC	CH = CHCH = CH <sub>2</sub> 7.79±0.02 IP from 84HOL, 7	(235) 7ROS/D	(981) RA.	55	229	*EST	3725-31-3
CH <sub>2</sub> = C(CH <sub>3</sub> )C=CC(CH	I <sub>3</sub> ) = CH <sub>2</sub> (8.95±0.1)	(324)	(1357)	118	494	77LEB/RYA	3725-05-1
	(7.9)	(226)	(945)	44	183	69BEN/CRU	1871-52-9
	(8.5)	(243)	(1017)	47	197	•EST	3725-30-2

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Continu	1ed		
ION Neutral	Ionization potential	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	∆ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>10</sub> <sup>+</sup>	(8.90)	(276)	(1158)	71	299	78LEU/WIR	68177-00-4
СН3	8.56±0.01 Value derived fro is in agreement. S			4.3±0.1 ium constant d -	18.0±0.5 eterminations (7	77PED/RYL 8LIA/AUS)	95-47-6
СНЗ	8.56±0.01 Value derived fro is in agreement. S			4.1±0.1 ium constant d	17.3±0.6 eterminations (7	77PED/RYL 8LIA/AUS)	108-38-3
нзс-О-снз	8.44±0.01 IP at 298 K from 6 is 8.52 eV. See: 84	_		4.3±0.2 n constant dete	18.0±0.9 rminations (78L	77PED/RYL IA/AUS)	106-42-3
<b>С</b> -с <sub>2</sub> н <sub>5</sub>	8.77±0.01 Value derived fro is in agreement. S					77PED/RYL / 8LIA/AUS)	100-41-4
СH <sub>3</sub>	(≤8.03)	(≤217)	(≤909)	32.1±1.3	134.4±5.4	77PED/RYL	2175-91-9
H <sub>3</sub> C CH <sub>3</sub>	(8.4) IP is onset of pho	(320) stoelectron	(1340) band (82SPA/K	127 COR).	530	*EST	
	(7.6) IP is onset of pho	(224) stoelectron	(938) band (81GLE/0	49 GUB2).	205	*EST	3725-28-8

Table 1. Positive Ion Table - Continued

			ve ion tabl	e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> <i>H</i> (I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>10</sub> +				··· <del></del>			
	(8.5) IP is onset of phot	(230) toelectron	(964) band. See also	34 : 82HAS/NEU.	144	76ALL	657-23-8
H <sub>3</sub> C	(8.0) IP is onset of phot	(273) coelectron l	(1141) band (84GLE/	88 HAI).	369	*EST	63001-13-8
	(8.4) IP is onset of phot	(242) oelectron t	(1012) pand.	48.1	201.3	81GOD/SCH	765-72-0
	(≤7.89)	(≤242)	(≤1012)	60	251	*EST	53143-64-9
$\Diamond \Diamond$	(8.20)	(246)	(1029)	57	238	*EST	15439-15-3
C <sub>8</sub> H <sub>10</sub> Br <sup>+</sup>	**************************************						<del></del>
CH <sub>3</sub> Br CH <sub>3</sub>	From proton affini (832) kJ/mol.	178 ity of 1,3,2-	743 C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub> I	Br (RN 576-22-7	7). PA = (19	9) kcal/mol,	
C <sub>8</sub> H <sub>10</sub> N <sup>+</sup>	From proton affini (945.) kJ/mol.	166 ty of 2,3-cy	695 clopentenopyr	idine. PA = (2	25.8) kcal/mc	ol,	
ALC NH	From proton affini (949.) kJ/mol.	166 ty of 3,4-cy	696 clopentenopyr	idine. PA = (2	26.8) kcal/mo	i,	

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>10</sub> N <sup>+</sup>										
( ) H+	From proton affir PA = 226.7 kcal/s			N 496-15-1) (	85BOL/HOU).					
C <sub>8</sub> H <sub>10</sub> NO <sub>2</sub> +										
(H <sub>3</sub> C NO <sub>2</sub> )	From proton affin PA = 199.8 kcal/i	153 aity of 1,3,4- mol, 836. kJ	641 .C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub> N( /mol.	D <sub>2</sub> (RN 89-81	7-2) (84ROL/HO	U).				
C <sub>8</sub> H <sub>10</sub> N <sub>2</sub> O <sub>2</sub> +		···		<del></del>						
O <sub>2</sub> N NICH <sub>3</sub> l <sub>2</sub>	(7.6±0.1)	(191)	(801)	16.1±0.4	67.3±1.8	84FUR/MUR	100-23-2			
C <sub>8</sub> H <sub>10</sub> O +					<del></del>					
СНЗ	8.23 IP from 83RUS/F	(146) RE.	(611)	-44	-183	*EST	42104-03-0			
СН <sub>3</sub> СН <sub>3</sub>	(8.26) IP from 83RUS/F	(153) R.E.	(640)	-37.6±0.3	-157.2±1.4	77PED/RYL	526-75-0			
CH <sub>3</sub>	(8.0) IP is onset of phot	(146) coelectron b	(609) and.	-38.9±0.2	−162.9±0.9	77PED/RYL	105-67-9			
H <sub>3</sub> C CH <sub>3</sub>	8.05±0.02	147	615	-38.7±0.2	-161.8±1.0	77PED/RYL	576-26-1			
н <sub>3</sub> с—Он	(8.09) IP from 83RUS/FI	(149) RE.	(624)	-37.4±0.3	-156.6±1.1	77PED/RYL	95-65-8			

Table 1. Positive Ion Table - Continued

			-					
ION	Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> F	I <sub>10</sub> O +							
·	но С2Н5	(7.84) IP from 83RUS/F	(146) RE.	(612)	-34.4±0.2	-144.1±1.0	77PED/RYL	123-07-9
	Сн <sub>2</sub> осн <sub>3</sub>	8.85±0.03	186	780	-18	<b>-74</b>	73BIL/CHO	538-86-3
	O-CH <sub>3</sub>	7.90	(157)	(657)	-25	-105	*EST	578-58-5
	осн3	(8.0) IP is onset of phot	(160) oelectron b	(668) and.	−25±1	−104±5	77PED/RYL	100-84-5
	H3C OCH3	7.9 IP is onset of phot	(158) oelectron b	(662) and.	-24	-100	•EST	104-93-8
	OC2H5	8.13±0.02	163	683	-24.3±0.1	−101.7±0.5	77PED/RYL	103-73-1
	OCH3	(≤8.05) IP from 83HOU/R	(≤207) CON.	(≤865)	21	88	*EST	74437-38-0
C <sub>8</sub> H	0CH <sub>3</sub> SCH <sub>3</sub>	(≤8.05)	(≤172)	(≤720)	-14	-57	*EST	2388-73-0

Table 1. Positive Ion Table - Continued

	Table 1. Positive foil Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>8</sub> H <sub>10</sub> OS + OCH <sub>3</sub>	≤7.80	(≤168)	(≤703)	-12	-50	*EST	1879-16-9			
° -S-c <sub>2</sub> H <sub>5</sub>	(≤8.75) IP from 81MOH/	(≤193) JIA.	(≤809)	-8	-35	*EST	4170-80-3			
CH3	(≤8.70) IP from 81MOH/	(≤193) JIA.	(≤808)	-7.6	-31.8	•EST	934-72-5			
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub> + OCH <sub>3</sub> OCH <sub>3</sub>	(7.8) IP is onset of pho	(127) toelectron	(530) band.	-53±0.7	-223±3	77PED/RYL	91-16-7			
OCH3	(7.8) IP is onset of pho	(122) toelectron	(511) band.	58	-242	*EST	151-10-0			
насо Осна	7.53 IP from 85OIK/A	(118) .BE, 82LEV	(493) //LIA.	-56	-234	*EST	150-78-7			
	(8.8) IP is onset of pho	(173) toelectron	(724) band.	-30	-125	•EST	15940-88-2			
	(9.1) IP is onset of pho	(154) stoelectron	(645) band (85GLE/JA)	-56 H).	-233	•EST	54338-82-8			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub> +	(≤9.33) IP is onset of pho	(≤138) toelectron l	(≤576) band.	-77	-324	•EST	
	(8.7) IP is onset of pho	(127) toelectron t	(532) pand.	-73	-307	*EST	74896-14-3
H <sub>3</sub> C-	(9.14) IP is onset of pho	(139) toelectron l	(582) pand (81BEC	-72 /HOF).	300	•EST	29978-55-0
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub> S +	(9.4) IP from 81MOH/	(150) JIA.	(628)	-67	-279	*EST	599-70-2
C8H10O3S+	(9.5) IP is onset of pho	(160) toelectron t	(668) pand (84AIT/	-60 GOS).	-249	*EST	
C <sub>8</sub> H <sub>10</sub> S + SC <sub>2</sub> H <sub>5</sub>	7.88±0.02	200	837	18.4±0.6	77.0±2.6	77PED/RYL	622-38-8
CH <sub>2</sub> SCH <sub>3</sub>	(8.42)	(213)	(892)	19.0±0.7	79.5±2.9	77PED/RYL	766-92-7
H <sub>3</sub> C SCH <sub>3</sub>	(≤8.00)	(≤200)	(≤838)	16	66	*EST	4886-77-5

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number					
С <sub>8</sub> H <sub>10</sub> S +	7.5 IP is onset of pho	(189) (790) toelectron band.	16	66	*EST	623-13-2					
				<del>-</del>							
C <sub>8</sub> H <sub>10</sub> S <sub>2</sub> +											
SCH <sub>3</sub>	7.7 IP is onset of pho	(206) (864) toelectron band (81TRA	29 /RED, 82LEV/I	121 LIA).	*EST	2388-68-3					
SCH <sub>3</sub>	(≤8.0)	(≤211) (≤885)	27	113	*EST	2388-69-4					
H <sub>3</sub> CS SCH <sub>3</sub>	(7.3) IP is onset of pho	(195) (817) toelectron band.	27	113	*EST	699-20-7					
C <sub>8</sub> H <sub>10</sub> Se <sup>+</sup>											
SeC <sub>2</sub> H <sub>5</sub>	(7.6) IP is onset of pho	(207) (865) toelectron band (81BAK	31 /ARM).	132	*EST	17774-38-8					
SeCH <sub>3</sub>	(7.5) IP is onset of pho	(200) (837) toelectron band (81BAK	27 /ARM).	113	•EST	1528-88-7					
C <sub>8</sub> H <sub>11</sub> +											
CH3.	From proton affii	177 739 nity of 1,2- $C_6H_4(CH_3)_2$	(RN 95-47-6). P	A = 193.3 kc	al/mol, 809. kJ/mol	l.					
CH <sub>3</sub> H <sub>2</sub> CH <sub>3</sub>	From proton affii 820. kJ/mol.	174 727 nity of 1,3-C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	(RN 108-38-3).	PA = 195.9 k	cal/mol,						

Table 1. Positive Ion Table - Continued

Table 1. Tositive fon Table – Continueu									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>8</sub> H <sub>11</sub> +			· · · · · · · · · · · · · · · · · · ·			······································			
нзс(•)снз	From proton affin 803. kJ/mol.	178 ity of 1,4-C	745 <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub> (R	N 106-42-3). 1	PA = 192.0 kcal/	mol,			
H <sub>2</sub> C <sub>2</sub> H <sub>5</sub>	From proton affin 802. kJ/mol.	181 ity of C <sub>6</sub> H <sub>5</sub>	757 ;C <sub>2</sub> H <sub>5</sub> (RN 100	9-41-4). PA =	191.6 kcal/mol,				
C <sub>8</sub> H <sub>11</sub> BrO <sup>+</sup>									
H <sub>3</sub> C Br	(≤9.35) IP from 82PFI/GE	(≤180) !R.	(≤755)	-35	-147	*EST	13271-49-3		
C <sub>8</sub> H <sub>11</sub> CIO <sup>+</sup>		··-							
н <sub>3</sub> с а	(9.35) IP from 82PFI/GE	(170) P.R.	(713)	-45	-189	*EST	17530-69-7		
C <sub>8</sub> H <sub>11</sub> ClSi <sup>+</sup>		-				"·			
CH3	(8.93) IP from 84VES/H.	(156) AR.	(652)	<b>-5</b> 0	-210	*EST	768-33-2		
C <sub>8</sub> H <sub>11</sub> N <sup>+</sup>									
NH <sub>2</sub>	(8.5) IP is onset of phot	(212) oelectron b	(885) and.	16	65	*EST	64-04-0		
HNC <sub>2</sub> H <sub>5</sub>	(≤7.67) IP from 82ROZ/H	(≤190) OU2.	(≤796)	13±1	56±6	77PED/RYL	103-69-5		
(CH <sub>3</sub> ) <sub>2</sub>	7.12±0.02	188	788	24±0.7	101±3	82FUR/SAK	121-69-7		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> <i>H</i> (Io	on)	Δ <sub>f</sub> <i>H</i> (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C8H11N+ CH3 CH3	(7.27)	(182)	(759)	14	58	*EST	611-21-2
NHCH <sub>3</sub>	(7.26)	(180)	(753)	13	53	*EST	696-44-6
CH3 NHCH3	(7.13)	(177)	(741)	13	53	•EST	623-08-5
H <sub>3</sub> C NH <sub>2</sub>	≤7.77±0.05	(≤186)	( <i>≤777</i> )	6	27	*EST	87-59-2
H <sub>3</sub> C NH <sub>2</sub>	(≤7.65±0.05)	(≤182)	(≤761)	5	23	*EST	95-68-1
H <sub>3</sub> C CH <sub>3</sub>	7.2 IP is onset of pho	(172) toelectron b	(718) pand.	5	23	*EST	95-78-3
H <sub>3</sub> C CH <sub>3</sub>	7.33±0.05	(175)	(734)	6±0.2	27±1	'EST	87-62-7
H <sub>3</sub> C NH <sub>2</sub>	(≤7.68±0.05)	(≤183)	(£764)	5	23	•EST	95-64-7

Table 1	Positive	Ion Table	_	Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne-		Neutral reference	CAS registry
C <sub>8</sub> H <sub>11</sub> N <sup>+</sup> NH <sub>2</sub> CH <sub>3</sub>	7.2 IP is onset of pho	(171) otoelectron b	(716) aand.	5	21	*EST	108-69-0
H <sub>3</sub> C CH <sub>3</sub>	(≤8.9±0.1)	(≤210)	(≤879)	5	20	*EST	108-75-8
C <sub>8</sub> H <sub>11</sub> N <sub>2</sub> O <sub>2</sub> +							
( CH3 NO2 ) H	+ From proton affi PA = 214.6 kcal/	167 nity of N,N-0 /mol, 898. kJ,	699 Iimethyl-4-nitr /mol.	roaniline (RN 1	.00-23-2) (84F	.oL/HOU).	
C <sub>8</sub> H <sub>11</sub> P <sup>+</sup>							
P(CH <sub>3</sub> ) <sub>2</sub>	7.58±0.05	(184)	(771)	10	40	*EST	672-66-2
		· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	
$C_8H_{12}^+$ (E),(E)-CH <sub>3</sub> CH = C(CH <sub>3</sub> )	CH = CHCH = CH <sub>2</sub> (≤8.01)	(≤208)	(≤872)	24	99	*EST	58434-77-8
CH <sub>2</sub> =CHCH=CHCH(CH	I <sub>3</sub> )CH = CH <sub>2</sub> (8.4±0.1) IP from 84GRO/	(226) GRO.	(945)	32.2	134.7、	*EST	925-52-0
$n-C_4H_9C=CCH=CH_2$	(8.83±0.01)	(248)	(1038)	44±2	186±7	78SHA	17679-92-4
$(E)-n-C_4H_9CH = CHC=CH$	I (8.87±0.01)	(248)	(1040)	44	184	*EST	42104-42-7
$n-C_3H_7C=CC(CH_3)=CH_2$	(8.62±0.01)	(241)	(1008)	42	176	*EST	17669-40-8
$(C_2H_5)_2C = CHC = CH$	(8.54±0.01)	(240)	(1004)	43	180	*EST	2750-71-2
	(8.4)	(213)	(891)	19	81	82KOZ/MAS	1700-10-3

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C8H12+	(8.5)	(221)	(925)	25±2	105±8	•EST	1073-07-0
	(8.9)	(219)	(917)	14.0±0.3	58.6±1.2	77PED/RYL	111-78-4
(E) (Z)	(8.2) IP is onset of pho	(218) toelectron b	(912) pand.	29	121	*EST	5259-71-2
	(8.9)	(248)	(1041)	43±1	182±3	75ALL/MEY	1781-78-8
С∙сн	(≤9.92)	(≤257)	(≤1076)	28±1	119±3	75ALL/MEY	931-48-6
CH=CH <sub>2</sub>	(8.93±0.02) See also: 84GRO/	(221) /GRO.	(927)	15.6±0.3	65.1±1.2	77PED/RYL	100-40-3
CCH3	(8.60±0.01)	(219)	(917)	21	87	*EST	37689-19-3
C<2H <sup>3</sup>	(8.89±0.02)	(227)	(950)	22	92	•EST	14564-97-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ <sub>f</sub> H(	Ion)	$\Delta_{f}H(Ne)$	utral)	Neutral reference	CAS registry
C <sub>8</sub> H <sub>12</sub> +  C <sub>8</sub> H <sub>12</sub> +  C <sub>H<sub>3</sub></sub> C <sub>H<sub>3</sub></sub>	(7.96±0.05)	(192)	(804)	9	36	*EST	3853-27-8
СН <sub>3</sub>	(8.0±0.1)	(195)	(818)	11	46	•EST	4249-09-6
CH=CH <sub>2</sub>	(≤9.22) IP from 81BIS/GI	(≤252) LE.	(≤1056)	39.8±0.8	166.5±3.5	77PED/RYL	16177-46-1
CH-CH <sub>2</sub>	(≤9.20) IP from 81BIS/GI	(≤246) LE.	(≤1031)	34.3±0.8	143.5±3.4	77PED/RYL	6553-48-6
	(8.9) IP is onset of pho	(247) toelectron	(1035) band (81BIS/G	42 (LE).	176	*EST	77614-53-0
	(8.9) IP is onset of pho	(247) toelectron	(1035) band (81BIS/G	42 LE).	176	*EST	77614-67-6
∑ <sup>6</sup> H <sub>2</sub>	8.08	(237)	(993)	51	213	*EST	822-93-5
	(8.92) See also: 82HAS/	(211) NEU.	(881)	4.9±0.2	20.5±0.8	77PED/RYL	931-64-6

Table 1. Positive Ion Table - Continued

	Table	1. 1 05101	ve ton table	Contin	ucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne- kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C8H <sub>12</sub> +	≤9.02	≤220	≤920	12	50	79AUE/BOW	497-35-8
\$H2	(≤9.40) See also: 85MAR	(≤231.2) ⁄MAY.	(≤967.2)	<b>14±1</b> -	60±3	<i>77</i> KOZ/BYC	31463-35-1
$\triangle$	(≤8.95)	(≤234)	( <b>≤</b> 980)	28	116	*EST	50695-42-6
	(≤9.39)	(≤244)	(≤1022)	28	116	*EST	50895-58-4
	(≤9.18)	(≤264)	(≤1102)	52±2	216±8	73ENG/AND2	28636-10-4
	(≤9.23)	(≤259)	(≤1084)	46±2	193±7	73ENG/AND2	13027-75-3
	(9.4) IP is onset of pho	(238) toelectron t	(997) pand.	21±3	90±14	81GOD/SCH2	250-21-5
$\bigcirc\!$	(≤8.44)	(≤228)	(≤954)	33	140	*EST	7647-57-6

Table 1. Positive Ion Table - Continued

<del></del>		1. 1 031111		e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>12</sub> +							
	(8.65)	(233)	(975)	33	140	*EST	14783-50-7
	(8.4) IP is onset of pho	(266) toelectron b	(1112) and.	72	302	•EST	21426-37-9
	(8.8) IP is onset of pho	(275) toelectron b	(1151) and.	72	302	*EST	25399-32-0
C <sub>8</sub> H <sub>12</sub> Cr <sub>2</sub> O <sub>8</sub> +							
о ст о о о о о о о о о о о о о о о о о о	(8.0) IP is onset of photon	(-290) toelectron b	(–1212) and.	-474±7	-1984±28	82PIL∕SKI	15020-15-2
С8H <sub>12</sub> Mo <sub>2</sub> O <sub>8</sub> +	6.54 Ha IP from 84LIC/BI		(-1175)	-432±2	-1806±10	81CAV/CON	14221-06-8
C <sub>8</sub> H <sub>12</sub> N <sup>+</sup>		, , , , , , , , , , , , , , , , , , ,				<del></del>	·····
(H5C2 NH2) HT	From proton affin 895. kJ/mol.	158 ity of 3-C <sub>2</sub> H	662 I <sub>5</sub> C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub> (	(RN 587-02-0).	PA = 214.0 k	cal/mol,	
( NHC <sub>2</sub> H <sub>5</sub> H+	From proton affin 928. kJ/mol.	157 ity of C <sub>6</sub> H <sub>5</sub> 1	658 NHC <sub>2</sub> H <sub>5</sub> (R1	√ 103-69-5). PA	. = 221.8 kcal	/mol,	
((CH3)2) H+	From proton affin	166 ity of C <sub>6</sub> H <sub>5</sub> I	696 N(CH <sub>3</sub> ) <sub>2</sub> (RN	V 121-69-7). PA	. = 223.4 kcal,	/mol,	

Table 1. Positive Ion Table - Continued

			ve ion lable	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> <i>H</i> (I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>12</sub> N+  CH(CH <sub>3</sub> ) <sub>2</sub>	From proton affir 951. kJ/mol.	152 hity of 2-iso	635 propylpyridine	(RN 75981-47	-4). PA = 227	.2 kcal/mol,	
C <sub>8</sub> H <sub>12</sub> N <sub>4</sub> + (E)-(NCC(CH <sub>3</sub> ) <sub>2</sub> ) <sub>2</sub> N <sub>2</sub>	(9.2) IP is onset of pho	(271) toelectron	(1134) band.	59±0.4	246±1.8	84LEB/GUT	34241-39-9
С <sub>8</sub> H <sub>12</sub> O +	(≤9.24) IP from 82PFI/GH	(≤171) ER.	(≤718)	-42	-174	*EST	4694-17-1
CICH3)3	(8.38) IP from 83ZYK/E	(157) ERC.	(656)	-37	-153	*EST	7040-43-9
Or°	(8.8) IP is onset of phot	(148) toelectron l	(619) pand (81CAR/0	−55±1 GAN).	−230±5	77PED/RYL	2716-23-6
ОСНЗ	(≤8.15) IP from 83HOU/I	(≤173) RON.	(≤724)	-15	-62	*EST	17190-90-8
C <sub>8</sub> H <sub>12</sub> OP <sup>+</sup> OH  H <sub>3</sub> C  H <sub>3</sub> C	From proton affin PA = 216 kcal/mo			RN 10311-08-	7) (86TRA/MU	אנא).	
C <sub>8</sub> H <sub>12</sub> OS +	(8.0) IP is onset of phot	(125) oelectron t	(523) pand (81JOR/C	-60 AR).	-249	*EST	76698-82-3

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
Ionization potential eV					Neutral reference	CAS registry number					
(7.8) IP is onset of phot			−60 R).	-249	*EST						
≤8.80 See also: 84OLI/FI		541	−74±0.5	-308±2	77PED/RYL	933-52-8					
		:625)	-68±3	−287±13	*EST	3471-13-4					
		502)	-79	-330	82MOR/MER						
(9.28±0.05)	(145) (6	508)	-68.5±3	−287±12	*EST	126-81-8					
		584)	-73	-304	*EST						
				-304	*EST						
		88)	-129	-542	*EST						
	(7.8) IP is onset of photo  ≤8.80 See also: 84OLI/Fi  (≤9.45) IP from 82PFI/GE  (8.62) IP from 82MOR/M  (9.28±0.05)  (9.28±0.05)  (9.05) IP from 84AIT/GO  (9.05) IP is onset of photo  (8.6)	(7.8) (120) ( IP is onset of photoelectron band  ≤8.80 ≤129 ≤ See also: 84OLI/FLE.  (≤9.45) (≤149) (≤ IP from 82PFI/GER.  (8.62) (120) (5 IP from 82MOR/MER.  (9.28±0.05) (145) (6  (≤9.2) (≤139) (≤ IP from 84AIT/GOS.	(7.8) (120) (504) IP is onset of photoelectron band (81JOR/CAI  \$8.80	(7.8) (120) (504) -60 IP is onset of photoelectron band (81JOR/CAR).  \$8.80	eV kcal/mol kJ/mol kcal/mol kJ/mol  (7.8) (120) (504) -60 -249  IP is onset of photoelectron band (81JOR/CAR).  \$8.80	CV					

Table 1. Positive Ion Table - Continued

	Table	I. POSITIVE	on Table	- Cont	inued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ior kcal/mol		-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>12</sub> P <sup>+</sup>					<u> </u>		
PH(CH <sub>3</sub> ) <sub>2</sub>	From proton affir 961. kJ/mol.	156 hity of C <sub>6</sub> H <sub>5</sub> I	651 P(CH <sub>3</sub> ) <sub>2</sub> (RN	672-66-2).	PA = 229.6 kca	l/mol,	
C <sub>8</sub> H <sub>12</sub> S +							
CICH3)3	(8.32) IP is onset of photon		(812) nd (83VES/H	2 (AR).	9	*EST	1689-78-7
€ S	(8.0) IP is onset of phot		(804) nd (84AIT/G	8 OS).	32	*EST	
C <sub>8</sub> H <sub>12</sub> Si <sup>+</sup> (CH <sub>2</sub> =CH) <sub>4</sub> Si	(9.3) IP is onset of phot		(958) nd.	15	61	85GAD/GUB	1112-55-6
SICH3/2H	(8.92±0.15)	(203)	(848)	-3	-13	*EST	766-77-8
$C_8H_{12}Sn + Sn(CH = CH_2)_4$	(8.4) IP is onset of phot		(1162) nd (81NOV/0	84 :VI),	352	*EST	1112-56-7
C <sub>8</sub> H <sub>13</sub> +	From proton affin (866) kJ/mot, (RN 862 kJ/mot, (RN 6 (76SOL/FIE, 8SSF	171 ities of 2-me 497-35-8), 2- 94-92-8) and	717 hylenebicyclo methylbicyclo	[2.2.1]hepta	-2-ene PA = 20	6 kcal/mol,	3197-78-2
CH3	From proton affini 906. kJ/mol.		837 clopropylethy	lene (RN 8	22-93-5). PA =	216.5 kcal/mol,	50555-45-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l	Ion) l kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number				
C <sub>8</sub> H <sub>13</sub> Br <sup>+</sup>					****						
Br	(9.4±0.1) IP is onset of phot	(194) coelectron	(812) band (84DEL/	–23 ABE).	<b>-</b> 95	*EST	7697-09-8				
C <sub>8</sub> H <sub>13</sub> I +							· · · · · · · · · · · · · · · · · · ·				
\$ P	(8.7) IP is onset of phot	(192) oelectron	(805) band (84DEL/	-8 ABE).	-34	*EST	931-98-6				
C <sub>8</sub> H <sub>13</sub> NO +		<u>,</u>		·····	i						
H <sub>3</sub> C NH <sub>2</sub>	(≤8.55) IP from 82PFI/GE	(≤150) P.R.	(≤628)	-47	-197	*EST	873-95-0				
C <sub>8</sub> H <sub>13</sub> O +	****					· · · · · · · · · · · · · · · · · · ·	<del></del>				
CH <sub>3</sub> OH	From proton affin 869. kJ/mol (86TA	-	487 limethylcyclohe	x-2-ene-1-on	e PA = 207.61	kcal/mol,					
H <sub>3</sub> C CH <sub>3</sub>	From proton affin PA = 217.6 kcal/n			uran (RN 105	599-58-3) (85H0	OU/ROL).					
C <sub>8</sub> H <sub>14</sub> +	_i				······································	<del></del>					
(E)-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH	= CHCH = CH <sub>2</sub> (8.45) IP from 81MAS/M	(198) IOU.	(830)	4	15	*EST	39491-65-1				
(E)-CH <sub>2</sub> =CHCH <sub>2</sub> CH=C	H(CH <sub>2</sub> ) <sub>2</sub> CH <sub>3</sub> (8.96) IP from 84HOL.	(215)	(897)	8	32	*EST	53793-31-0				
(E),(E)-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH =	= CHCH = CHCH <sub>3</sub> (8.13) IP from 81MAS/M	(188) OU.	(786)	0.5	2	*EST	60919-80-4				
(E)-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> C(CH <sub>3</sub> )	= CHCH = CH <sub>2</sub> (8.02) IP from 81MAS/M	(185) OU.	(776)	0.5	2	*EST	40095-05-4				

Table 1. Positive Ion Table - Continued

				e Ion Table				<del></del>
IOI	Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
Col	H <sub>14</sub> +							
€8.	(Z)-(CH <sub>3</sub> ) <sub>3</sub> CCH = CHCH	= CH <sub>2</sub>						
		(8.46) IP from 81MAS/N	(199) IOU.	(833)	4	17	*EST	59697-92-6
	(E)-(CH <sub>3</sub> ) <sub>3</sub> CCH = CHCH	= CH <sub>2</sub>						
	(-) ( 3/3	(8.43) IP from 81MAS/N	(197) 10U.	(823)	2	10	*EST	36320-14-6
	(CH <sub>3</sub> ) <sub>2</sub> C = CHCH = C(CH	2)2						
	(4003)25 - 60000 - 1(400	(7.67) IP from 81MAS/N	(171) 1OU.	(716)	-6 .	-24	*EST	764-13-6
	$(Z),(Z)-(CH_3CH=C(CH_3)$	)) <sub>=</sub>						
	(2),(2)-(0113011 - 0(0113	(8.1)	(182)	(761)	<b></b> 5	-20	*EST	21293-01-6
		IP is onset of phot	oelectron b	and (84HON/ZH	(O).			
	(E),(E)-( $CH_3CH = C(CH_3)$	))2						
	(-),(-) (3	(7.8)	(177)	(740)	~3	-12	*EST	18265-39-9
		IP is onset of phot	oelectron b	and (84HON/ZH	10).			
	$(E),(Z)-(CH_3CH=C(CH_3))$	))2						
		(8.0)	(181)	(756)	-4	-16	*EST	2417-88-1
		IP is onset of phot	oelectron b	and (84HON/ZH	10).			
	$C_2H_5C(=CH_2)C(=CH_2)C$	C <sub>2</sub> H <sub>5</sub>						
		(8.58)	(199)	(834)	1	6	*EST	16356-05-1
		IP from 81MAS/M	100.					
	1-C <sub>8</sub> H <sub>14</sub>	(9.95±0.02)	(248)	(1041)	19±1	81±4	79ROG/DAG	629-05-0
	n-C <sub>5</sub> H <sub>11</sub> C≡CCH <sub>3</sub>	9.31±0.01	230	962	15±0.2	64±2	79ROG/DAG	2809-67-8
	C <sub>4</sub> H <sub>9</sub> C=CC <sub>2</sub> H <sub>5</sub>	9.22±0.01	228	953	15±0.5	63±2	79ROG/DAG	15232-76-5
	n-C <sub>3</sub> H <sub>7</sub> C≡CC <sub>3</sub> H <sub>7</sub>	9.20±0.01	226	948	14±0.5	60±2	79ROG/DAG	1942-45-6
		8.82	196.9	824.0	-6.5±0.3	-27.0±1.1	77PED/RYL	931-88-4
	CH <sup>CH</sup> 3	8.44±0.05	174	726	-21	-88	76JEN	1003-64-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/moi		Neutral reference	CAS registry
C <sub>8</sub> H <sub>14</sub> +	(8.48±0.01)	(180)	(755)	−15.2±0.2	−63.4±1	77PED/RYL	1453-24-3
CH₂CH₃	(8.83±0.01)	(191)	(799)	-13	-53	•EST	2808-71-1
c <sub>2</sub> н <sub>5</sub>	(8.88±0.01)	(192)	(804)	-13	-53	*EST	3742-42-5
C <sub>3</sub> H <sub>7</sub>	(8.48±0.01)	(186)	(779)	<b>-</b> 9	<b>-</b> 39	*EST	3074-61-1
С <sub>3</sub> н <sub>7</sub>	(8.84±0.02)	(196)	(819)	-8	-34	*EST	34067-75-9
снксн3,5	8.81 IP from 84HOL.	(193)	(807)	-10	-43	*EST	4276-45-3
H <sub>3</sub> C CH <sub>3</sub>	(8.8) IP is onset of photo		(931) and (82SPA/GLE	20 3).	82	*EST	59020-33-6
$\bigcirc$	(9.6) IP is onset of photo		(921) nd.	-1.2	-5	81MAI/SCH	7078-34-4

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	.uea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>14</sub> <sup>+</sup>	9.43±0.02	194	813	-23±1	−97±4	81GOD/SCH	280-33-1
$\bigcirc$	(≤9.46)	(≤221)	(≤925)	3	12	•EST	185-65-9
$\Diamond \Diamond$	(9.45)	(225)	(941)	7	29	*EST	175-56-4
C <sub>8</sub> H <sub>14</sub> CIN <sup>+</sup>	(≤8.55) IP from 82NEL/C	(≤190) 3AN.	( <i>≤</i> 795)	-7	~30	*EST	
C <sub>8</sub> H <sub>14</sub> CINO +	(9.19±0.03) IP from 79GOL/k	(178) KUL.	(747)	-33	-140	*EST	10499-33-9
C <sub>8</sub> H <sub>14</sub> N <sup>+</sup> (N) CH <sub>3</sub>	From proton affin PA = (231.0) kca			2-ene,3-meti	hyl		
(C) CH <sub>2</sub> ) H+	From proton affin PA = (230.1) kca			ne, 3-methyl	lene		

Table 1. Positive Ion Table - Continued

		1. 1 03111		e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>14</sub> N <sub>2</sub> +							
CH <sub>3</sub>	(7.8)	(202)	(846)	22±1	93±5	80ENG	49570-30-1
ŲÑ	IP is onset of pho	toelectron t	and.				
Ċнз	`						
	≤7.75	(≤190)	(≤795)	11	47	*EST	281-29-8
C <sub>8</sub> H <sub>14</sub> O +		<u> </u>					
$n-C_3H_7CH = C(CH_3)C(=$	O)CH <sub>3</sub> (9.22)	(159)	(666)	-54	-224	•EST	39899-08-6
$\bigcirc$ °	9.08 See also: 86SPA/F	144 RAD.	604	-65±1	-272±5	77PED/RYL	502-49-8
H <sub>O</sub>	(9.0) IP is onset of phot	(149) toelectron b	(624) and (83TUR/	-58 HAN).	-244	*EST	
H C	(9.0) IP is onset of phot	(148) oelectron b	(620) and (83TUR/	-59 HAN).	-248	*EST	
C <sub>8</sub> H <sub>14</sub> OSi <sup>+</sup>							
SIÇC2HS	(8.1) IP is onset of photo	(129) oelectron ba	(540) and (83ZYK/I	–58 BRC).	-241	*EST	13271-67-5
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub> +							
H3C OC2H5	(≤8.6) IP from 82MOR/M		(≤358)	-113	-471	82MOR/MER	

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Tabl	e - Conti	inued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) I kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub> +	(≤9.2) IP from 84GLE/I	(≤177) OOB.	(≤741)	-35	-147	*EST	69492-24-6
C <sub>8</sub> H <sub>15</sub> + (CH <sub>3</sub> ) <sub>2</sub> C = C(CH <sub>3</sub> )C(CH	(3) <sub>2</sub> From proton affin (881.) kJ/mol.	(152) aity of (CH	(636) I <sub>3</sub> ) <sub>2</sub> C = C(CH <sub>3</sub>	)C(CH <sub>3</sub> ) = C	H <sub>2</sub> PA = (210.	6) kcal/mol,	
C <sub>8</sub> H <sub>15</sub> N <sup>+</sup>	≤7.50 IP from 81MUL/F	(≤170) PRE2.	(≤711)	-3	-12	*EST	13815-46-8
	(6.7) IP is onset of phot	(153) toelectron	(642) band (81MUL	-1 /PRE2).	-4	*EST	13937-89-8
	(6.8) IP is onset of phot	(160) coelectron	(671) band (81MUL	4 /PRE2).	15	*EST	2403-57-8
	(≤7.48) IP from 81MUL/F	(≤193) PRE2.	(≤809)	21	87	*EST	
C <sub>8</sub> H <sub>15</sub> NO <sup>+</sup>	(8.80±0.03) IP from 79GOL/K	(171) IUL.	(717)	-32	-132	*EST	1074-51-7
C8H15N3+	(≤8.08)	(≤212)	(≤889)	26	109	*EST	38705-10-1

Table 1. Positive Ion Table - Continued

	****		ive ion Tabl	- Contin	nucu		
Neutral	Ionization potenti	• .	Ion) l kJ/mol	_	leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>15</sub> O +							
C: OH	CH <sub>3</sub> From proton a 847. kJ/mol.	98 ffinity of cycle	410 Ohexylethanon	e (RN 823-76-7	'). PA = 202.4	kcal/mol,	
C <sub>8</sub> H <sub>15</sub> O <sub>2</sub> +							
C. och3	From proton a PA = 203.7 kc			carboxylate (F	N 4630-82-4).		
C <sub>8</sub> H <sub>16</sub> +  1-C <sub>8</sub> H <sub>16</sub>	9.43±0.01	198	829	-10.4+0.2	-81.2±1	77PED/RYL	111 66 0
(Z)-2-C <sub>8</sub> H <sub>16</sub>	8.91±0.01						111-66-0
<del>"</del>		(184)	(767)	-22	<b>-91</b>	*EST	7642-04-8
(E)-2-C <sub>8</sub> H <sub>16</sub>	8.91±0.01	(183)	(765)	-23	<del>-</del> 95	*EST	13389-42-9
(Z)-3-C <sub>8</sub> H <sub>16</sub>	8.85±0.01	(183)	(764)	-21	<del>-</del> 90	*EST	14850-22-7
(E)-3-C <sub>8</sub> H <sub>16</sub>	8.85±0.01	(181)	(759)	-23	-95	*EST	14919-01-8
$(Z)$ -4- $C_8H_{16}$	8.84±0.01	(182)	(763)	-21	-90	*EST	7642-15-1
(E)-4-C <sub>8</sub> H <sub>16</sub>	8.83±0.01	(181)	(758)	-22	-94	*EST	14850-23-8
$(C_2H_5)_2C = CHC_2H_5$	(8.48±0.01)	(171)	(715)	-25	-103	*EST	16789-51-8
$C_2H_5CH_2C(CH_3) = C(CH_3)$	CH <sub>3</sub> ) <sub>2</sub> (8.19±0.01)	(162)	(680)	-26	-110 -	*EST	7145-20-2
(Z)-(CH <sub>3</sub> ) <sub>2</sub> CHCH = CH	ICH(CH <sub>3</sub> ) <sub>2</sub> (8.85±0.01)	(179)	(749)	-25	-105	*EST	10557-44-5
(E)-(CH <sub>3</sub> ) <sub>2</sub> CHCH = CH	ICH(CH <sub>3</sub> ) <sub>2</sub> (8.84±0.01)	(178)	(743)	-26	-110	*EST	692-70-6
$(Z)-C_2H_5C(CH_3) = C(C$	CH <sub>3</sub> )C <sub>2</sub> H <sub>5</sub> (8.17±0.01)	(162)	(678)	-26	-110	*EST	19550-87-9
$(E)-C_2H_5C(CH_3) = C(C$	(8.16±0.01)	(162)	(677)	-26	-110	*EST	19550-88-0
(tert-C <sub>4</sub> H <sub>9</sub> )CH <sub>2</sub> C(CH <sub>3</sub> )	$= CH_2$ (8.91±0.01)	(179)	(749)	-26.4±0.2	-110.4±1	77PED/RYL	107-39-1
$(C_2H_5)_2C = C(CH_3)_2$	8.17±0.01	(162)	(678)	-26	-110	*EST	19780-67-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{f}H(1)$		$e$ - Continuous $\Delta_f H(Ne)$		Neutral	CAS registry
Neutral	eV	-	kJ/mol	kcal/mol		reference	number
C <sub>8</sub> H <sub>16</sub> <sup>+</sup> (CH <sub>3</sub> ) <sub>2</sub> CHC(CH <sub>3</sub> )	= C(CH <sub>3</sub> ) <sub>2</sub> (8.17±0.01)	(160)	(670)	<b>-2</b> 8	-118	*EST	565-77-5
	<b>(</b> ,	()	(-14)				
○.	9.76 IP from charge tra Reference IP's, flu			nt determinatio			292-64-8
CH <sub>3</sub>	9.42 IP from charge tra Reference IP's, flu	-			-180.9±1.9 ns (82SIE/MA	77PED/RYL U, 82LIA).	590-66-9
Сн <sub>3</sub>	9.41 IP from charge tra Reference IP's, flu	_		nt determinatio		•	6876-23-9
CH <sub>3</sub>	(<9.78) IP from 81HER/S	(<184) IC.	(<771)	-41.1±0.4	−172.3±1.8	77PED/RYL	2207-01-4
H <sub>3</sub> C···CH·3	9.53 IP from charge tra Reference IP's, flu	-		nt determination			2207-03-6
н <sub>3</sub> с Сн <sub>3</sub>	(<9.98) IP from 81HER/SI	(<186) IC.	(<778)	-44.1±0.4	-184.6±1.7	77PED/RYL	638-04-0
н <sub>3</sub> сСН	9.56  IP from charge tra  Reference IP's, flu	-		nt determination	=		2207-04-7
нзс	(<9.93) IP from 81HER/SI	(<187) IC.	(<781)	-42.2±0.4	-176.6±1.7	77PED/RYL	624-29-3

Table 1. Positive Ion Table - Continued

•	Table	1. Posi	tive Ion Tabl	e - Cont	tinued		
ION Neutral	Ionization potential eV	-	I(Ion) ol kI/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>16</sub> +				<del></del>			······································
c <sub>2</sub> н <sub>5</sub>	9.54 IP from charge tra Reference IP's, flu				0.1 -172.4±0.6 ations (82SIE/MA	77PED/RYL AU, 82LIA).	1678-91-7
—сн <sub>2</sub> сн <sub>2</sub> сн <sub>3</sub>	(10.00±0.04)	(195)	(817)	-35.3±(	0.2 −147.8±0.6	77PED/RYL	2040-96-2
C <sub>8</sub> H <sub>16</sub> N <sup>+</sup>							W 4
(CH3) H+	From proton affin PA = (231.7) kcal			:lo[2.2.2]octa	ne (RN 695-88-5)	).	
C <sub>8</sub> H <sub>16</sub> NO +		<del> </del>					
(OH) HT	From proton affin PA = 223.9 kcal/n			2.2.2]octan-2	e-ol (RN 17997-65	-8).	
OH HT	From proton affini PA = 220.6 kcal/n			o[2.2.2]octai	1-2-01 (RN 40335-	14-6).	
C <sub>8</sub> H <sub>16</sub> N <sub>2</sub> +							
$\binom{N}{N}$	7.0 IP is onset of phote	(174) Delectron	(729) band (85HON/	13 YAN).	54	*EST	
C <sub>8</sub> H <sub>16</sub> N <sub>2</sub> O <sup>+</sup>							
H <sub>3</sub> C CH <sub>3</sub> O H <sub>3</sub> C CH <sub>3</sub>	(≤9.13±0.03)	(≤204)	<b>(</b> ≤854)	-6.33±0	55 −26.48±0.3	83BYS	54143-34-9
C <sub>8</sub> H <sub>16</sub> O + n-C <sub>6</sub> H <sub>13</sub> COCH <sub>3</sub>	9.40±0.03	140	586	-77	-321	75TRC	111-13-7
n-C <sub>4</sub> H <sub>9</sub> COCH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	(9.10±0.05)	(133)	(558)	-76	-320	75TRC	589-63-9

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	e Ion Tab	le - Contin	ued —————		
ION Neutral	Ionization potential	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>16</sub> O <sup>+</sup> tert-C <sub>4</sub> H <sub>9</sub> CO(iso-C <sub>3</sub> H <sub>7</sub> )	(8.80±0.01)	(122)	(510)	-80.8±0.3	-338.3±1.2	77PED/RYL	5857-36-3
С <sub>8</sub> H <sub>16</sub> O <sub>2</sub> + осн <sub>3</sub>	(8.7) IP is onset of pho	(104) toelectron b	(435) and.	-97	-404	*EST	29887-60-3
осн <sub>3</sub>	(8.6) IP is onset of phot	(102) toelectron b	(426) and.	<del>-</del> 97 -	-404	•EST	30363-80-5
H <sub>3</sub> C CH <sub>3</sub> O CH <sub>3</sub>	9.2 IP is onset of phot	(135) coelectron b	(567) and.	-77	-321	*EST	22431-89-6
C <sub>8</sub> H <sub>16</sub> O <sub>2</sub> Si +	≤9.44 IP from 81KHV/Z	(≤52) ZYK.	(≤216)	-166	-695	*EST	67059-49-8
C <sub>8</sub> H <sub>16</sub> O <sub>4</sub> +	(8.8) IP is onset of phot		(218) and (83BAK	-151±0.5 /ARM, 82LEV/	401	82BYS/MAN	294-93-9
C <sub>8</sub> H <sub>16</sub> Si +	(≤8.89) IP from 81KHV/Z	•	(≤734)	-30	-124	*EST	69657-20-1
С <sub>8</sub> H <sub>17</sub> + (СН <sub>3</sub> ) <sub>2</sub> ССН <sub>2</sub> СН <sub>2</sub> СН <sub>2</sub> СН	2CH <sub>3</sub> From appearance	139 potential me	582 easurement (	84LOS/HOL).			40626-79-7

Table 1. Positive Ion Table - Continued

			e ion table	- Contin		<del></del>	
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>17</sub> N <sup>+</sup>							
N(CH <sub>3</sub> ) <sub>2</sub>	(7.5) IP is onset of photo	(148) toelectron b	(618) and.	-25	-106	*EST	98-94-2
H <sub>3</sub> C CH <sub>3</sub>	(7.77) IP from 82ROZ/H	(148) IOU.	(620)	-31	-130	*EST	2439-13-6
H <sub>3</sub> C CH <sub>3</sub>	(7.66) IP from 82ROZ/H	(152) IOU.	(637)	-24	-102	*EST	16544-52-8
H <sub>3</sub> C CH <sub>3</sub>	(7.63) IP from 82ROZ/H	(149) IOU.	(625)	-27	-111	*EST	14446-76-5
H <sub>3</sub> C CH <sub>3</sub>	(7.77) IP from 82ROZ/H	(148) OU.	(621)	-31	-129	*EST	1003-84-5
C <sub>8</sub> H <sub>17</sub> O <sub>4</sub> +							
( 0 0 Ht	From proton affini PA = 221.6 kcal/m	ity of 1,4,7,10		odecane (12	-Crown-4) (RN 2	94-93-9).	
C <sub>8</sub> H <sub>18</sub> + n-C <sub>8</sub> H <sub>18</sub>	(9.82)	(177) (188)	(739) <i>(786</i> )	-49.8 -38.6	-208.5 -161.4	74SCO	111-65-9
	IP from charge trai	nsfer equilib	rium constant d			82LIA).	
(CH <sub>3</sub> ) <sub>2</sub> CH(CH <sub>2</sub> ) <sub>4</sub> CH <sub>3</sub>	9.84	176	<b>7</b> 34	-51.4±0.3	-215.1±1.4	74SCO	592-27-8
	IP from charge tran				<i>−165.9±1.4</i> ns (81MAU/SIE,	82LIA).	
(CH <sub>3</sub> ) <sub>3</sub> CC(CH <sub>3</sub> ) <sub>3</sub>	9.8 IP is onset of photo		(720) nd (81SZE/KO)	-53.9±0.3 R, 81KIM/KA		77PED/RYL	594-82-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>18</sub> + (CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	9.86	(171)	(714)	-57	-238	*EST	540-84-1
C <sub>8</sub> H <sub>18</sub> ClP + (text-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> PCl		\ <b>y</b>					
	(8.0) IP is onset of pho	(112) toelectron b	(469) and.	-72	-303	*EST	13716-10-4
C <sub>8</sub> H <sub>18</sub> FP <sup>+</sup> (tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> PF	(8.2) IP is onset of pho	(63) toelectron b	(265) and.	-126	-526	*EST	29146-24-5
C <sub>8</sub> H <sub>18</sub> Hg <sup>+</sup> (n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> Hg	(≤8.35)	(≤185)	(≤774)	-8±2	-32±8	77PED/RYL	629-35-6
(iso-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> Hg	(≤8.30)	(≤182)	(≤763)	-9±2	-38±8	77PED/RYL	24470-76-6

108 450
From proton affinity of N,N-dimethylcyclohexanamine (RN 98-94-2) (86TAF/GAL). PA = 232.7 kcal/mol, 974. kJ/mol.

(109) (457)

From proton affinity of N,3,5-trimethylpiperidine PA = (230) kcal/mol, (962) kJ/mol, (RN 14446-76-5) (84HOP/JAH).

C <sub>8</sub> H <sub>18</sub> NO + (tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NO	(6.77)	(126)	(527)	-30±3	-126±13	*EST	2406-25-9
C <sub>8</sub> H <sub>18</sub> NO <sub>2</sub> P <sup>+</sup>							
P-NICHICH31212	(≤8.52) IP from 82WOF	(≤71) V/HAR.	(≤295)	-126	-527	*EST	
C <sub>8</sub> H <sub>18</sub> N <sub>2</sub> + (E)-(tert-C <sub>4</sub> H <sub>9</sub> N) <sub>2</sub>							
	(7.7) IP is onset of ph	(169) otoelectror	(707) a band.	−9±0.7	-36±3	80ENG	927-83-3

Table 1. Positive Ion Table - Continued

			re ton tab	ie - Contii			
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>18</sub> N <sub>3</sub> OP + CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(≤8.14±0.10) IP from 82COW	(≤88) /LAT.	(≤367)	-100	-418	*EST	15199-21-0
C <sub>8</sub> H <sub>18</sub> N <sub>3</sub> P + S   S   N-CH <sub>3</sub>   N-CH <sub>3</sub>	(≤7.71±0.10) IP from 82COW,	(≤177) /LAT.	(≤739)	-1	-5	•EST	14418-26-9
C <sub>8</sub> H <sub>18</sub> N <sub>3</sub> PS + CH <sub>3</sub>	(≤8.14±0.10) IP from 82COW/	(≤164) 'LAT.	(≤688)	-23	-97	*EST	15199-22-1
C <sub>8</sub> H <sub>18</sub> O + (n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O	≤9.43 IP from 80BAC/1	≤138 MOU. Valud	≤577 derived fron	−80 n hydrogen affi	-333 nity considerat	77PED/RYL tions: 9.37 eV.	142-96-1
(sec-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O	(9.11) IP from 81HOL/I	(122) FIN.	(509)	-88±0.5	−370±2	77PED/RYL	6863-58-7
(tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O	8.81 See also: 80BAC/	117 MOU.	488	-87±0.2	-362±1	77PED/RYL	6163-66-2
C <sub>8</sub> H <sub>18</sub> OS + [(CH <sub>3</sub> ) <sub>3</sub> C] <sub>2</sub> SO	8.0 IP is onset of pho	(113) toelectron ba	(471) and.	-72	-301	*EST	2211-92-9
C <sub>8</sub> H <sub>18</sub> O <sub>2</sub> + (tert-C <sub>4</sub> H <sub>9</sub> O) <sub>2</sub>	(8.4) IP is onset of pho	(111) toelectron ba	(461) and.	-83±0.7	-349±3	77PED/RYL	110-05-4
C <sub>8</sub> H <sub>18</sub> O <sub>2</sub> S + (iso-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> SO <sub>2</sub>	(9.54±0.05)	(92)	(384)	-128±0.7	-536±3	77PED/RYL	10495-45-1
C <sub>8</sub> H <sub>18</sub> O <sub>4</sub> <sup>+</sup> (CH <sub>3</sub> O(CH <sub>2</sub> ) <sub>2</sub> OCH <sub>2</sub> ) <sub>2</sub>	(≤9.8) IP from 83BAK/A		(≤289)	157	-656	*EST	112-49-2
C <sub>8</sub> H <sub>18</sub> S + (n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> S	(8.2) IP is onset of phot		(624) nd.	-40.0±0.3	−167.3±1.1	77PED/RYL	544-40-1
(iso-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> S	8.36±0.05	150	628	-43±0.5	-179±2	77PED/RYL	592-65-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> <i>H</i> (Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>18</sub> S + (tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> S	(8.0) IP is onset of phot	(139) coelectron	(582) band.	-45.1±0.2	-188.9±0.7	77PED/RYL	107-47-1
C <sub>8</sub> H <sub>18</sub> SSi + CH <sub>3</sub>	(7.92±0.03) IP from 81GUS/V	(165) OL	(691)	(-17)	(-73)	81GUS/VOL	
C <sub>8</sub> H <sub>18</sub> S <sub>2</sub> + (n-C <sub>4</sub> H <sub>9</sub> S) <sub>2</sub>	(≤8.51) Dialkyl disulfides upon ionization; a the experimentally	diabatic ic	nization poter	tials are probab			629-45-8
(tert-C <sub>4</sub> H <sub>9</sub> S) <sub>2</sub>	(7.7) IP is onset of phot CSSC bond angle are probably well	from 90° 1	to 180° upon io	nization; adiab	atic ionization		110-06-5
C <sub>8</sub> H <sub>18</sub> Si <sub>2</sub> + CH <sub>2</sub> = CH[Si(CH <sub>3</sub> ) <sub>2</sub> ] <sub>2</sub> CH =	= CH <sub>2</sub> (≤8.63) IP from 81KHV/Z	(≤166) .YK.	(≤694)	-33	-139	*EST	
C <sub>8</sub> H <sub>19</sub> CINP <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> CP(CI)NHC(CH <sub>3</sub> ) <sub>3</sub>	(≤8.75) IP from 85ELB/E	(≤145) LL.	(≤606)	-57	-238	*EST	
C <sub>8</sub> H <sub>19</sub> N + n-C <sub>8</sub> H <sub>17</sub> NH <sub>2</sub>	(8.5) IP from 79AUE/B	(155) OW.	(648)	-41	-172	*EST	111-86-4
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	(7.69±0.03) Ion heat of format 143 kcal/mol, 598 i	_	-	gen affinities o	-156.6±1.3 f secondary am	77PED/RYL ines:	111-92-2
(sec-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	(7.63) IP from 79AUE/B	(138) OW.	(579)	-38	-157	*EST	626-23-3
(i-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	(7.81) IP from 79AUE/B	(137) OW.	(574)	-43±2	-179±8	73PEP/GAF	110-96-3

Table 1. Positive Ion Table - Continued

		1. PUSILI		e - Contin			
ION Neutral	Ionization potential eV	-	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>8</sub> H <sub>19</sub> N <sub>2</sub> OP +							
P-NCH(CH3/2/2	(≤7.74) IP from 82WOR	(≤79) /HAR.	(≤330)	-100	-417	*EST	
					· · · · · · · · · · · · · · · · · · ·		·
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> OH	From proton affi 852. kJ/mol.	82 nity of (n-C <sub>2</sub>	345 <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O (RN :	142-96-1). PA =	= 203.7 kcal/i	mol,	
(sec-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> OH	From proton affi 874. kJ/mol.	68 nity of (sec-	286 C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O (RN	N 6863-58-7). PA	A = 209.0 kc	al/mol,	
C <sub>8</sub> H <sub>19</sub> O <sub>4</sub> <sup>+</sup> CH <sub>3</sub> (OCH <sub>2</sub> CH <sub>2</sub> ) <sub>2</sub> O(H)O	CH2CH2OCH2		· · · · · · · · · · · · · · · · · · ·				
3(2/22/2-)		-15	-64				
	From proton affi 938. kJ/mol.	nity of CH <sub>3</sub> (	(ОСН <sub>2</sub> СН <sub>2</sub> ) <sub>3</sub>	OCH <sub>3</sub> (RN 112	-49-2). PA =	= 224.1 kcal/mol,	
C <sub>8</sub> H <sub>19</sub> P <sup>+</sup>				····			
(tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> PH	(7.9) IP is onset of pho	(132) otoelectron b	(551) pand.	<b>-</b> 50	-211	*EST	819-19-2
C <sub>8</sub> H <sub>19</sub> S <sup>+</sup>							
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> SH	From proton affi 873. kJ/mol.	117 nity of (n-C <sub>4</sub>	490 <sub>1</sub> H <sub>9</sub> ) <sub>2</sub> S (RN 5	44-40-1). PA =	208.7 kcal/m	nol,	
(t-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> SH	From proton affi 890. kJ/mol.	108 nity of (t-C <sub>4</sub>	451 H <sub>9</sub> ) <sub>2</sub> S (RN 10	07-47-1). PA =	212.8 kcal/m	oi,	
C <sub>8</sub> H <sub>20</sub> Ge <sup>+</sup>				······································			
(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> Ge	8.9 IP is onset of pho	(167) toelectron b	(698) and.	−38±2	-161±8	77PED/RYL	597-63-7
C <sub>8</sub> H <sub>20</sub> N <sup>+</sup>				·····			
n-C <sub>8</sub> H <sub>17</sub> NH <sub>3</sub>	From proton affir	(104) nity of n-C <sub>8</sub> 1	(436) H <sub>17</sub> NH <sub>2</sub> (RN	111-86-4). PA	= 220.4 kcal/	'mol,	
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affir	100 nity of (n-C <sub>4</sub>	417 H <sub>9</sub> ) <sub>2</sub> NH (RN	i 111-92-2). PA	= 228.4 kcal	/mol,	
(sec-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH <sub>2</sub>	From proton affii PA = (230.9) kca			N 626-23-3), re-	-evaluated (8-	4НОР/ЈАН).	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mol	ion) kJ/moi	•	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>8</sub> H <sub>20</sub> N <sup>+</sup>							
(iso-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH <sub>2</sub>	_	94	395				
	From proton affine 956. kJ/mol.	nity of (iso-	C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH (R	N 110-96-3).	PA = 228.6 kca	al/mol,	
(tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH <sub>2</sub>		01	202				
	From proton affin	91 nity of (tert	382 -C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH (I	RN 21981-37-	3). PA = 233.2	kcal/mol,	
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> )NH			4				
	From proton affir	(97) nity of (i-Ca	(406) .H-)-(C-H-)N	I (RNI 7087-69	R-5) PA = 235	3 kgal/mol	
	984. kJ/mol.	miy or (i-C	31772(2115)[	(177, 199)-00	5-5). FA = 255.	s keavmor,	
(CH <sub>3</sub> ) <sub>3</sub> C(CH <sub>2</sub> ) <sub>2</sub> NH(CH <sub>3</sub>	)2		4				
	From proton affir 964. kJ/mol.	(100) nity of (CH	(417) <sub>3</sub> ) <sub>3</sub> C(CH <sub>2</sub> ) <sub>2</sub> N(	(CH <sub>3</sub> ) <sub>2</sub> (RN	15673-04-8). PA	= 230.4 kcal/mol,	
C <sub>8</sub> H <sub>20</sub> N <sub>2</sub> +							
$(C_2H_5)_2NN(C_2H_5)_2$	(6.50)	(149)	(625)	-0.5	-2	*EST	4267-00-9
	IP from charge tra	ansfer equi	librium constai	nt determinat	ion (84MAU/N		4207-00-7
(i-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NN(CH <sub>3</sub> ) <sub>2</sub>							
	(6.53) IP from charge tra	(153) ansfer equi	(639) librium constar	2 nt determinat	9 ion (86RUM).	*EST	60678-72-0
(i-C <sub>3</sub> H <sub>7</sub> )(CH <sub>3</sub> )NN(CH <sub>3</sub> )(	i-C <sub>3</sub> H <sub>7</sub> )						
	(6.58)	(154)	(645)	2 at determines	10	*EST	60678-71-9
a v v n+	IP from charge tra	ansier equi		nt determinat	(801COM). S	ec also. 04INEL.	
С <sub>8</sub> H <sub>20</sub> N <sub>3</sub> P+ н							
P-NICHICH312/2	(≤7.40) IP from 82WOR/I	(≤136) HAR.	(≤568)	-35	-146	*EST	
C <sub>8</sub> H <sub>20</sub> N <sub>4</sub> <sup>+</sup>							···-
(N <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> ) <sub>2</sub>	(≤7.1)	(≤213)	(≤890)	49	205	70BEN/O'N	13304-29-5
C <sub>8</sub> H <sub>20</sub> O <sub>4</sub> Si <sup>+</sup> (C <sub>2</sub> H <sub>5</sub> O) <sub>4</sub> Si	(s9.77)	(≤-93)	(≤−388)	-318±5	-1331±21	80TEL/RAB	78-10-4

Table 1.	Positive	Ion Tabl	e -	Continued
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ION	Innin-state and the						
Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	lon) l kJ/mol	∆ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>8</sub> H <sub>20</sub> Si +							
(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> Si	(8.9)	(142)	(594)	-63±4	~265±15	77PED/RYI	- 631-36-7
C <sub>8</sub> H <sub>20</sub> Sn +							
(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> Sn	(8.1)	(176)	(737)	-11±0.7	~45±3	27DED MAIN	<b>***</b>
	IP is onset of photos		oand.	1110.7	- <del>1</del> 3±3	77PED/RYI	597-64-8
C <sub>8</sub> H <sub>21</sub> N <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NH(CH <sub>2</sub> ) <sub>4</sub> N(CH	<sup>[3)</sup> 2						
	From proton affin	108 ity of (CH <sub>3</sub>	450 ) <sub>2</sub> N(CH <sub>2</sub> ) <sub>4</sub> 1	N(CH <sub>3</sub> ) <sub>2</sub> (RN 1	11-51-3). PA	. ≈ 246. kcal/mol,	
(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NHN(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>							
- 0-1 · 1 2 3/2		135	564				
	From proton affini PA = 230.4 kcal/m	ty of (C <sub>2</sub> H <sub>2</sub> ol, 964. kJ/	$_{5})_{2}NN(C_{2}H_{2})$	5) <sub>2</sub> (RN 4267-00	-9) (84MAU	NEL).	
C <sub>8</sub> H <sub>22</sub> NSi <sup>+</sup>						·	
(CH <sub>3</sub> ) <sub>3</sub> Si(CH <sub>2</sub> ) <sub>3</sub> NH(CH <sub>3</sub>	3)2						
	_	75	312				
	From proton affinit 231.8 kcal/mol, 970.	y of (CH <sub>3</sub> ) kJ/mol.	<sub>3</sub> Si(CH <sub>2</sub> ) <sub>3</sub> N	(CH <sub>3</sub> ) <sub>2</sub> (RN 282	247-29-2).		
(CH-) (tant C II )C'NTY							
(CH <sub>3</sub> ) <sub>2</sub> (tert-C <sub>4</sub> H <sub>9</sub> )SiNH(	_	68	283				
	From proton affinity			SiN(CH_)_ (DN	1 66365 DE 70		
	PA = 229.7 kcal/mo	ol, 961. kJ/n	101.	/o.i. (C113)2 (10)	1 00303-03-7)	•	
8H24N4Mo+				_			
((CH <sub>3</sub> ) <sub>2</sub> N) <sub>4</sub> Mo	(≤5.30) (⊴	£153) (	≤642)	31±2	131±8	81CAV/CON	
8H <sub>24</sub> O <sub>2</sub> Si <sub>3</sub> + [(CH <sub>3</sub> ) <sub>3</sub> SiO] <sub>2</sub> Si(CH <sub>3</sub> ) <sub>2</sub>							
	(≤10.04) (≤- IP from 82ERM/KIR	-99) (≤ L	<b>~412)</b>	-330±3 -	1381±12	77PED/RYL	107-51-7
3H <sub>24</sub> Si <sub>3</sub> +							
Si <sub>3</sub> (CH <sub>3</sub> ) <sub>8</sub>	(7.7) (6 IP is onset of photoel	is) (2 ectron ban	273) d.	-112±4 →	470±17	77PED/RYL	3704-44-7
Fe <sub>2</sub> O <sub>9</sub> +			<u> </u>				
0 0 0 C 0 C 0 C 0 C	(7.91±0.01) (-1	136) (-:	571)	-319±6 -1	.334±23	77PED/RYL	15321-51-4

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Net kcal/mol		Neutral reference	CAS registry number				
C <sub>9</sub> H <sub>5</sub> ClCrO <sub>3</sub> +  OC C <sub>1</sub> CO  CO  Cc	(7.00±0.1)	(74)	(311)	-87±1	-364±6	77PED/RYL	12082-03-0				
C <sub>9</sub> H <sub>6</sub> CrO <sub>3</sub> + CO Cr CCO	7.0 IP is onset of pho	(78) toelectron b	(325) and. See also:	–84±2 82GUI/PFI.	−350±9	77PED/RYL	12082-08-5				
C9H6F3+	From proton affir PA = 192.9 kcal/r			(RN 705-28-2) (	85MAR/MO	D).					
C <sub>9</sub> H <sub>6</sub> OS <sup>+</sup>	(8.5) IP is onset of pho	(222) toelectron b	(930) pand (84GLE/	26 BIS).	110	*EST	10095-83-7				
С <sub>9</sub> H <sub>6</sub> O <sub>2</sub> +	(8.65) IP is onset of pho	(190) toelectron b	(795) eand (84GLE/	–10 BIS).	<b>-</b> 40	*EST	18895-06-2				
0 =0	(8.8) IP is onset of pho	(167) toelectron b	(699) pand.	-36	-150	*EST	16214-27-0				
C9H6S3+	(7.8) IP is onset of pho	(253) toelectron b	(1060) pand.	74±2	311±10	72GEI/RAU	3445-76-9				

Table 1. Positive Ion Table - Continued

	Table	1. FUSITI	ve Ion Table	e - Contin	ueu		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>7</sub> BrO <sub>2</sub> <sup>+</sup> C <sub>9</sub> H <sub>7</sub> BrO <sub>2</sub> <sup>+</sup> Br  COOH	(8.80) IP from 84SCH.	(152)	(638)	-50	-211	•EST	
C <sub>9</sub> H <sub>7</sub> ClO <sub>2</sub> +	(8.85) IP from 84SCH.	(147)	(615)	-57	-239	*EST	4513-41-1
С <sub>9</sub> H <sub>7</sub> FO <sub>2</sub> + соон	(9.00) IP from 84SCH.	(103)	(430)	-105	-438	*EST	451-69-4
C <sub>9</sub> H <sub>7</sub> IO <sub>2</sub> +	(8.55) IP from 84SCH.	(160)	(668)	(-37)	(-156)	*EST	90276-19-0
C9H7MnO3 +  OC CO  Mn  CH3	(7.4) IP is onset of pho	(47) toelectron t	(196) pand (81CAL/	–124 HUB, 81CAL/	-518 LIC).	*EST	12108-13-3
C <sub>9</sub> H <sub>7</sub> N <sup>+</sup>	8.62±0.01	249	1043	50±0.2	211±1	79VIS	91-22-5
	8.53±0.03	247	1031	50±0.2	208±1	79VIS/WIL	119-65-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I	ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>9</sub> H <sub>7</sub> NO +	8.00±0.02	(215)	(903)	31	131	*EST	1613-37-2				
NC-CH3	(≤9.82) IP from 85GAL/C	(≤237) GER.	(≤991)	11	44	*EST	1443-80-7				
(C)(O)NO	(7.9) IP is onset of photo	(213) toelectron	(890) band.	31	128	*EST	1532-72-5				
С <sub>9</sub> H <sub>8</sub> <sup>+</sup>											
CEC-CH3	8.41 See also: 81ELB/I	(258) LIE.	(1079)	64	268	85DAV/ALL	673-32-5				
C=CH	(≤8.61±0.02)	(≤264)	(≤1105)	65	274	*EST	766-47-2				
H <sub>3</sub> C C■CH	(≤8.63±0.02)	(≤264)	(≤1106)	65	273	•EST	766-82-5				
H <sub>3</sub> C C=CH	8.3 IP is onset of phot	(257) coelectron l	(1075) pand.	65	274	*EST	766-97-2				
	8.14±0.01	227	948	39±0.2	163±1	80KUD/KUD	95-13-6				

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	e Ion Table	- Contin	ued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>8</sub> +	(7.99)	(271)	(1134)	87	363	*EST	14867-83-5
C9H8Cl2+	(8.7) IP is onset of pho	(234) toelectron b	(979) vand.	33	140	*EST	2415-80-7
C <sub>9</sub> H <sub>8</sub> F <sub>3</sub> +						and the second second	
CF3 CH-CH3	From proton affir PA = 194.6 kcal/s			H <sub>2</sub> (RN 402-24	1-4) (84HAR/	нои).	
C <sub>9</sub> H <sub>8</sub> MnO <sub>3</sub> +							***************************************
OCCO	From proton affir + PA = (200.6) kca	(44) nity of n <sup>5</sup> -me I/mol, (839.)	(183) ethylcyclopenta ) kJ/mol.	adienyl-(RN 12	2108-13-3).		
C <sub>9</sub> H <sub>8</sub> N <sup>+</sup>							
	From proton affir 948. kJ/mol.	190 nity of quino	793 Dine (RN 91-22	2-5). PA = (2:	26.5) kcal/mol		
	From proton affir 945. kJ/mol.	190 nity of isoqui	793 inoline (RN 11	9-65-3). PA =	= 225.9 kcal/m	ol,	
C <sub>9</sub> H <sub>8</sub> NO <sup>+</sup>							
O() OH	From proton affir 940. kJ/mol.	172 nity of quino	721 line-1-oxide (F	UN 1613-37-2).	PA = 224.6	kcal/mol,	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne- kcal/mol		Neutral reference	CAS registry number			
C <sub>9</sub> H <sub>8</sub> N <sub>2</sub> +	(≤8.5) IP from 82CRI/LI	(≤299) :C.	(≤1251)	103	431	•EST	30855-80-2			
C <sub>9</sub> H <sub>8</sub> OS <sup>+</sup> CH <sub>3</sub>	(≤8.75) IP from 82BEN/D	(≤203) )UR.	(≤848)	1	4	•EST	33945-86-7			
CH3	(8.2) IP is onset of pho	(190) toelectron	(795) band (82BEN/D	1 UR).	4	*EST	51500-43-7			
С <sub>9</sub> H <sub>8</sub> O <sub>2</sub> +	(8.90±0.05) IP from 84SCH.	(155)	(649)	-50	-210	*EST	102-94-3			
Соон	(9.00±0.05) IP from 84SCH.	(153)	(641)	-54	-227	77PED/RYL	140-10-3			
	(≤9.38) IP from 85GLE/J	(≤249) AH.	(≤1043)	33	138	*EST	94499-50-0			
	(≤8.65) IP from 78MAR/5	(≤193) SCH.	(≤809)	<del>-</del> 6	-26	*EST				
	(≤8.90) IP from 78MAR/5	(≤204) SCH.	(≤854)	-1	<b>-</b> 5	*EST				

Table 1. Positive Ion Table - Continued

	Tubic .	. 1 03161	ve luii ladi	e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mol	lon) l kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>9</sub> H <sub>8</sub> O <sub>2</sub> +	(8.1) IP is onset of phot	(199) oelectron	(834) band.	12	52	*EST	60526-40-1
C <sub>9</sub> H <sub>8</sub> O <sub>2</sub> S +	(≤9.10) IP from 82BEN/D	(≤158) UR.	(≤662)	52	-216	*EST	6224-55-1
CH3 CH3	(≤9.20) IP from 82BEN/D	(≤160) UR.	(≤672)	-52	-216	•EST	6406-91-3
С9H8O3 +	(8.50±0.05) IP from 84SCH.	(93)	(389)	-103	-431	84SCH	614-60-8
С9H9 <sup>+</sup>	From proton affin PA = 203.8 kcal/n			(RN 766-97-2	) (85MAR/MC -	DD).	
	Δ <sub>f</sub> H(Ion) from ap structure may be in				<sub>5</sub> H <sub>5</sub> C(CH <sub>3</sub> )=	CH <sub>2</sub> (85HON/SEC	);
C <sub>9</sub> H <sub>9</sub> BrO <sub>2</sub> S <sup>+</sup> Br—CH <sub>3</sub> S O	≤8.92 IP from 84CAU/F	(≤174) UR.	(≤727)	-32	-134	*EST	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C9H9C1+	(≤8.64)	(≤228)	( <b>≤</b> 953)	28	119	•EST	1798-84-1		
C <sub>9</sub> H <sub>9</sub> ClO <sub>2</sub> S +	≤8.94 IP from 84CAU/I	(≤162) FUR.	(≤679)	<b>-44</b>	-184	*EST			
C <sub>9</sub> H <sub>9</sub> FO <sub>2</sub> S +  F—C C S O CH <sub>3</sub>	(≤9.05) IP from 84CAU/I	(≤145) FUR.	(≤607)	-64	-266	*EST			
C <sub>9</sub> H <sub>9</sub> N+	(9.16±0.06)	(248)	(1037)	36.6	153	•EST			
CH <sub>3</sub>	(7.44±0.015)	(203)	(850)	32	132	•EST	95-20-5		
CH <sub>3</sub>	(7.54±0.01)	(205)	(859)	32	132	•EST	83-34-1		
CH <sub>3</sub>	(7.60±0.015)	(207)	(865)	32	132	*EST	16096-32-S		
H <sub>3</sub> C N H	(7.54±0.015)	(205)	(859)	32	132	*EST	3420-02-8		

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>9</sub> H <sub>9</sub> N <sup>+</sup>			<del></del>	<u> </u>					
CH <sub>3</sub>	(7.53±0.015)	(205)	(859)	32	132	*EST	933-67-5		
СТУ⊢сн <sub>3</sub>	(≤7.12)	(≤214)	(≤895)	50	208	*EST	33804-84-1		
C <sub>9</sub> H <sub>9</sub> NO <sup>+</sup>									
H <sub>3</sub> C CH <sub>3</sub>	(8.4) IP is onset of pho	(249) toelectron b	(1042) pand.	55	232	•EST	19111-74-1		
H <sub>3</sub> CO CH <sub>2</sub> -CN	(8.77±0.05)	(209)	(876)	7.1	30	*EST	104-47-2		
C <sub>9</sub> H <sub>9</sub> NO <sub>4</sub> S +  O <sub>2</sub> N — C + S O CH <sub>3</sub>	(≤9.62) IP from 84CAU/F	(≤181) ₹UR.	(≤758)	-41	-170	*EST			
С9Н9О+									
CH30 C=CH3	193 806  From proton affinity of 4-CH <sub>3</sub> OC <sub>6</sub> H <sub>4</sub> C=CH (RN 768-60-5) (85MAR/MOD).  PA = 210.1 kcal/mol, 879. kJ/mol.								
C9H <sub>10</sub> +					·				
C=CH CH3	8.15 IP from 78FU/DL	217 JN and onse	907 et of photoelectro	29 on band (81F	121 (OB/ARA).	69BEN/CRU	766-90-5		
р С*С~Сн3	(8.08) IP is onset of photo	(214) coelectron b	(897) and (81KOB/AF	28 LA).	117	69BEN/CRU	873-66-5		

Table 1. Positive Ion Table - Continued

	Table 1. Toshtve fon Table - Continued								
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number		
C <sub>9</sub> H <sub>10</sub> <sup>+</sup> C <sub>9</sub> H <sub>3</sub> C <sub>2</sub> C <sub>2</sub> C <sub>4</sub> C <sub>4</sub> C <sub>2</sub>	8.19±0.02	216	903	27	113	69BEN/CRU	98-83-9		
CH2-CH=CH2	8.60 See also: 78FU/DI	(236) UN.	(986)	37±2 _	156±8	81СНІ/НҮМ	300-57-2		
	8.35 IP from 78FU/DU	229 N.	957	36±0.2	151±1	82FUC/HAL	873-49-4		
СH=CH <sub>2</sub>	8.20±0.02	217	909	28	118	69BEN/CRU	611-15-4		
CH=CH <sub>2</sub>	8.15±0.02	215	901	27	115	69BEN/CRU	100-80-1		
н <sub>3</sub> с сн=сн <sub>2</sub>	8.1±0.1 IP is onset of photo	(214) pelectron ba	(896) and.	27	115	69BEN/CRU	622-97-9		
	(8.3) IP is onset of photo		(862) nd.	15±0.2	61±1	80KUD/KUD	496-11-7		
	(8.47)	(293)	(1225)	97±2	408±8	73ENG/AND2	452-61-9		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathrm{f}}H(\mathrm{Id})$	\n)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcai/mol		kcal/mol		reference	number
C <sub>9</sub> H <sub>10</sub> <sup>+</sup>		<u> </u>					
	(8.2) IP is onset of pho	(246) toelectron b	(1030) and.	57	239	*EST	766-30-3
	(8.2) IP is onset of phor	(246) toelectron b	(1030) and.	57	239	•EST	24430-29-3
	(8.3) IP is onset of phot	(344) coelectron b	(1441) and (82SPA/F	153 KOR).	640	*EST	55980-70-6
	(7.9) IP is onset of phot	(271) toelectron b	(1133) and.	89	371	•EST	7092-57-1
C <sub>9</sub> H <sub>10</sub> Br <sup>+</sup>							
Br - CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	Value from appea	186 rance energ	777 y determinati	ons (86ORL/M	IS).		
C <sub>9</sub> H <sub>10</sub> BrNO <sup>+</sup>					<del>-</del>		
Br	(≤9.09) IP from 85GAL/C	(≤192) BER.	(≤803)	-18	<b>-74</b>	*EST	18469-37-9
C <sub>9</sub> H <sub>10</sub> Cl <sup>+</sup>	· · · · · · · · · · · · · · · · · · ·						
CI CICH3)2	From proton affin 858. kJ/mol. Value 716 kJ/mol.						

Table 1. Positive Ion Table - Continued

	Table	I. Positiv	e ion tabi	e - Conti	nueu		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol			leutral) i kJ/mol	Neutral reference	CAS registry number
C <sub>9</sub> H <sub>10</sub> CINO +				-			
CI-VICH312	(≤9.16) IP from 85GAL/0		(≤760)	-30	-124	*EST	14062-80-7
С <sub>9</sub> Н <sub>10</sub> F <sup>+</sup>						<del> </del>	
F CICH <sub>3</sub> 1 <sub>2</sub>	From proton affii 865. kJ/mol. Valu						
C <sub>9</sub> H <sub>10</sub> FNO <sup>+</sup>						<u> </u>	
F	(≤9.13) IP from 85GAL/0		(≤587)	<b>~</b> 70	-294	•EST	24167-56-4
	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·		
I - CH3  CH3	Value from appea	199 trance energ	833 y determinati	ons (86ORL/I	MIS).		
С <sub>9</sub> H <sub>10</sub> N <sup>+</sup> (нс≖ссн <sub>2</sub> ) <sub>3</sub> Nн	From proton affir 921. kJ/mol.	(319) iity of (HC=0	(1336) CCH <sub>2</sub> ) <sub>3</sub> N (R	N 6921-29-5).	PA = 220.2 k	cal/mol,	
C <sub>9</sub> H <sub>10</sub> NO <sub>2</sub> +	· · · · · · · · · · · · · · · · · · ·						
05N-CH3	Value from appea	189 rance energy	789 y determinati	ons (86ORL/I	MIS).		
C9H <sub>10</sub> N <sub>2</sub> + CN CN N(CH <sub>3</sub> 1 <sub>2</sub>	(7.60) IP is onset of phot		(963) and (81MOD	55 /DIS).	230	*EST	1197-19-9

Table 1. Positive Ion Table - Continued

						···	
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Iα kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>9</sub> H <sub>10</sub> N <sub>2</sub> O <sub>3</sub> +				· · · · · · · · · · · · · · · · · · ·	<del> </del>		
02N-C-NICH312	(\$9.46) IP from 85GAL/G	(≤192) BER.	(≤803)	-26	-110	*EST	7291-01-2
C <sub>9</sub> H <sub>10</sub> N <sub>4</sub> +							
H3C N N CH3	(≤8.7) IP from 84GLE/SF	(≤261) PA2	(≤1090)	60	251	•EST	6479-02-3
C <sub>9</sub> H <sub>10</sub> O <sup>+</sup>							<del></del>
CHO CHO	(8.7±0.2) IP from 84DEN/A	(182) UD.	(763)	-17	-73	84DEN/AUD	1335-10-0
СН3	(8.5) IP from 83AUD/M	(176) IIL.	(735)	-20	-85	83AUD/MIL	69380-02-5
СH3 Р С-СH3	(8.92) IP is onset of photo	(180) pelectron ba	(754) and. See also: 81	-26 RAB/HEL.	-107	•EST	577-16-2
H <sub>3</sub> C C=0	(8.85) IP is onset of photo	(175) selectron ba	(734) and. See also: 811	-29 RAB/HEL	-120	*EST	585-74-0
нзс Снз	(8.85) IP is onset of photo		(735) and. See also: 811	–28 RAB/HEL, 8	-119 BSGAL/GER.	*EST	122-00-9
CH2CH3	(9.16) IP from 79MCA/TR		(775)	−26±0.5	-109±2	77PED/RYL	93-55-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>10</sub> O +			<del></del>				
CH2 C CH3	(8.7) IP is onset of photon	(177) toelectron b	(741) and (78CEN/FR		−98.6±1.4	77PED/RYL	103-79-7
О	(8.4±0.2) IP from 84DEN/A	(186) AUD.	(779)	-7	-29	84DEN/AUD	104-54-1
OH OH	(8.6±0.2) IP from 84DEN/A	(192) AUD.	(802)	-6	-25	84DEN/AUD	
$\bigcirc$	(7.93)	(161)	(673)	-22±1	-92±5	77SHA/GOL	493-08-3
ОС ОН	(8.6) IP from 83AUD/N	(167) AIL.	(697)	-32	-133	83AUD/MIL	4254-29-9
C <sub>9</sub> H <sub>10</sub> O <sub>2</sub> +					***************************************		<del></del>
Ö—Ü—O—C2H5	(8.9) IP is onset of phot		(537) and (81MEE/W		-322	*EST	93-89-0
H <sub>3</sub> C CH <sub>3</sub>	(8.6) IP is onset of phot	(123) oelectron b	(514) and (81MEE/W <i>A</i>	-75 AH).	-316	*EST	89-71-4
0 c O CH3	(8.5) IP is onset of phot	(119) oelectron ba	(499) and (81MEE/W <i>A</i>	-77 AH).	-321	*EST	99-36-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No		Neutral reference	CAS registry
С <sub>9</sub> H <sub>10</sub> O <sub>2</sub> + 0	(8.4) IP is onset of pho	(117) toelectron l	(489) band (81MEE/W	77 AH).	-321	*EST	99-75-2
ооссн <sub>3</sub>	(8.98±0.2)	(132)	(553)	−75±0.5	-313±2	77PED/RYL	122-46-3
н <sub>3</sub> соСН3	8.2±0.1 See also: 85GAL/	(132) GER.	(552)	-57	-239	*EST	100-06-1
о с с н з	(8.53±0.05)	(137)	(573)	-59.8±1	~250±4	•EST	586-37-8
н <sub>3</sub> с Сн <sub>3</sub>	(8.9) IP from 81MEE/V	(124) VAH.	(517)	-81.6±0.4	−341.6±1.7	84COL/JIM	632-46-2
Ссоосн3	(≤8.92) IP from 83HOU/F	(≤176) RON.	(≤737)	-30	-124	*EST	3604-36-2
H <sub>3</sub> C CH <sub>3</sub>	(8.2) IP is onset of phot	(155) oelectron b	(649) pand.	-34	-142	•EST	60526-42-3
	(≤9.3) IP from 85GLE/JA	(≤191) AH.	(≤799)	-23	-98	*EST	94499-48-6

Table 1. Positive Ion Table - Continued

		1. Positive ion Table	- Conun			
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(No	cutral) kJ/mol	Neutral reference	CAS registry
C <sub>9</sub> H <sub>10</sub> O <sub>2</sub> +	(9.14) IP is onset of phot	(187) (784) toelectron band (85GLE/	-23 JAH).	-98	*EST	94595-48-9
	(≤8.85) IP from 78MAR/S	(≤167) (≤699) SCH.	<b>-37</b>	-155	*EST	67843-62-3
	(≤8.85) IP from 78MAR/S	(≤160) (≤668) SCH.	<b>-44</b>	-186	*EST	67843-61-2
o o	(8.4) IP is onset of phot	(243) (1017) coelectron band.	49	207	*EST	70705-73-6
C9H <sub>10</sub> O <sub>2</sub> S <sup>+</sup>	(8.7) IP from 84CAU/F	(164) (684) TUR.	-37	-155	*EST	
C <sub>9</sub> H <sub>10</sub> O <sub>2</sub> Si +	(8.0) IP is onset of phot	(156) (651) oelectron band (83ZYK/I	-29 ERC).	-121	*EST	1911-24-6
CH <sub>3</sub>	(8.1) IP is onset of photo	(157) (661) oelectron band (83ZYK/F	-29 ERC).	-121	•EST	73357-16-1

Table 1. Positive Ion Table - Continued

	Table.	1. Positi	ve ion labi	e - Conti	nuea		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number
С9Н11+			<del></del>			•	
Ċ(CH <sub>3</sub> ) <sub>2</sub>	(6.6)	(186) <i>(196)</i>	(777) (821)	32.4±1.:		81ROB/STE	16804-70-9
	Value at 298 K fro PA = 207.0 kcal/r (83BRA/BAE, 85)	nol, 866. k.	I/mol Value at	0 K from app	earance poten	tial measurements	
нзс снснз	From proton affin PA = 206.8 kcal/n			CH <sub>2</sub> (RN 622	-97-9) (84HAI	VHOU).	
C <sub>9</sub> H <sub>11</sub> Cl <sup>+</sup>				<del></del>			
CH2CI	(8.63±0.03)	(187)	(784)	-12	<b>-</b> 49	*EST	2745-54-2
C <sub>9</sub> H <sub>11</sub> N <sup>+</sup>							
Syn I I I	(7.1) IP is onset of phot	(222) oelectron l	(929) pand (82ROZ/	58 HOU2).	244	*EST	3334-89-2
VN CH <sub>3</sub>	(≤8.0) IP from 82CRI/LI0	(≤248) C.	(≤1037)	63	265	*EST	38201-24-0
	(≤9.15) IP from 79AUE/B	(≤229) OW.	(≤957)	18	74	*EST	10500-57-9
	(≤9.19) IP from 79AUE/B	(≤230) OW.	(≤963)	18	76	•EST	36556-06-6
					·		

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table ·	- Contin	ued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>11</sub> NO +	(≤9.04) IP from 85GAL/0	(≤186) 3ER.	( <i>≤777</i> )	-23	-95	*EST	611-74-5
H <sub>3</sub> C CN	(≤9.72) IP from 82PFI/GI	(≤214) ∃R.	( <b>≤</b> 896)	-10	-42	*EST	65115-71-1
(CH3)2N CHO	7.36±0.02 See also: 85GAL/	(160) GER.	(670)	-10	-40	*EST	100-10-7
OCH3	(≤7.6) IP from 82CRI/LI	(≤210) C.	(≤880)	35	147	*EST	27347-09-7
C9H <sub>11</sub> NOS <sup>+</sup> H <sub>3</sub> C CH <sub>3</sub>	(8.2) IP is onset of photon	(160) toelectron t	(670) pand (82LOU/VA	-29 .N).	-121	*EST	
С9H <sub>11</sub> NO <sub>2</sub> + NO <sub>2</sub> Сн <sub>3</sub> Сн <sub>3</sub> Сн <sub>3</sub>	(8.8) IP is onset of phot	(200) coelectron b	(836) pand.	-3	-13	*EST	603-71-4
(CH3)2N	(7.1) IP is onset of phot	(97) coelectron b	(405) and (81MEE/WA	-67 NH).	-280	*EST	619-84-1
CH <sub>2</sub> CH COOH	8.4 See also: 83CAN/I	119 HAM.	497	-74.8±0.3	-312.9±1.2	77PED/RYL	150-30-1

Table 1. Positive Ion Table - Continued

		20 2 00112	ve ion rable	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>11</sub> NO <sub>3</sub> +							
но———сн <sub>2</sub> сн ссон	(8.0) IP is onset of pho	(68) stoelectron t	(286) pand(83CAN/HA	–116 M).	-486	*EST	556-03-6
C. W. Not							
C <sub>9</sub> H <sub>11</sub> NS +							
— N(CH3/2	(≤7.70) IP from 82BER/F	(≤212) HEN.	(≤885)	34	142	*EST	15482-60-7
C. H. NSo t							
C <sub>9</sub> H <sub>11</sub> NSe <sup>+</sup>							
C-NICH3)2	(≤7.33) IP from 82BER/F	(≤220) IEN.	(≤919)	51	212	*EST	13120-03-1
С <sub>9</sub> Н <sub>11</sub> О + ОН							
~ .c.		128	535				
н <sub>3</sub> С СН <sub>3</sub>	From proton affii 873. kJ/mol.			(RN 122-00	0-9). PA = 208	.7 kcal/mol,	
н <sub>3</sub> со снсн <sub>3</sub>	From proton affir PA = 214.4 kcal/s			CH <sub>2</sub> (RN 63	17-69-4) (84HA	R/HOU).	
C9H <sub>12</sub> +							
	8.43±0.02	228	954	34	141	76JEN	696-86-6
Сн <sub>2</sub> сн <sub>2</sub> сн <sub>3</sub>	8.72±0.01 Value from charg (78LIA/AUS) is i		-		7.9±0.7 ations	77PED/RYL	103-65-1
CH(CH <sub>3</sub> ) <sub>2</sub>	8.73±0.01 Value from charg (78LIA/AUS) is i				4.0±1.0 ations	77PED/RYL	98-82-8

Table 1. Positive Ion Table - Continued

			VC TOIL TABLE	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	$\Delta_f H$ (Nekcal/mol		Neutral reference	CAS registry number
С9H <sub>12</sub> + Сн <sub>3</sub> Сн <sub>3</sub>	8.42±0.02 From charge tran	192 sfer equilib	803 rium constant de	-2.3±0.2	-9.5±1.1 s (78LIA/AUS).	77PED/RYL See: 84HOW/GO	526-73-8 DN.
CH <sub>3</sub> CH <sub>3</sub>	8.27±0.01 IP from 77ROS/D	187 PRA, 84HO	784 W/GON.	−3.3±0.2	-13.8±1.0	77PED/RYL	95-63-6
н <sub>3</sub> с Сн <sub>3</sub>	8.41±0.01 Value from charg (78LIA/AUS) is i					77PED/RYL	108-67-8
	(8.07) IP from 83BAL/N	(207) IEU.	(868)	21	89	*EST	29304-70-9
₩ H	8.81±0.03 IP from 85TUR/P	229 PAN.	959	26.1±0.3	109±1	72KOZ/TIM	
₩ H	(8.89) IP from 85TUR/P	(236) AN.	(988)	31	130	*EST	
	(8.3) IP is onset of photon	(231) coelectron b	(965) pand.	39	164	•EST	16529-82-1
	(≤8.92±0.03)	(≤252)	(≤1056)	47	195	*EST	16529-83-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H({ m Ic}$	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>9</sub> H <sub>12</sub> +							
	(8.2) IP is onset of photo	(283) toelectron b	(1185) and.	94.1	393.7	81GOD/SCH	3105-29-1
	≤8.10 IP is onset of phot	(≤217) coelectron b	(≤910) and.	31	128	•EST	766-29-0
	(≤9.12)	(≤317)	<b>(≤1325)</b>	106	445	•EST	31561-59-8
C <sub>9</sub> H <sub>12</sub> BrO <sub>2</sub> +  Br CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	(7.75) IP is onset of phot	(88) oelectron b	(369) and (81CAU/GL	-91 A).	-379	*EST	5408-07-1
C <sub>9</sub> H <sub>12</sub> CINO <sub>2</sub> + CH <sub>3</sub> CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	(≤8.03) IP from 81CAU/G	(≤83) BIA.	(≤346)	-103	-429	*EST	58921-31-6
CI CH3	(≤7.94) IP from 81CAU/G		(≤337)	-103	-429	*EST	56453-93-1

## $C_9H_{12}N^+$

(156) (651)

From proton affinity of 2,3-cyclohexenopyridine (RN 10500-57-9). PA = (227.7) kcal/mol, (953.) kJ/mol.

(156) (653)

From proton affinity of 3,4-cyclohexenopyridine (RN 36566-06-6). PA = (227.7) kcal/mol, (953.) kJ/mol.

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Tabl	e - Conti	inued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>9</sub> H <sub>12</sub> N <sup>+</sup> H <sub>2</sub> N — CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	From appearance	179 750 energy determination (8	60RL/MIS).			
C <sub>9</sub> H <sub>12</sub> NO +  OH  C.  N(CH <sub>3</sub> ) <sub>2</sub>	From proton affin (925) kJ/mol.	(122) (510) ity of C <sub>6</sub> H <sub>5</sub> CON(CH <sub>3</sub> ) <sub>2</sub>	(RN 611-74-:	5) (86TAF). P <i>A</i>	⊾ = (221) kcal/mol	,
C <sub>9</sub> H <sub>12</sub> NO <sub>2</sub> <sup>+</sup> CH <sub>3</sub> NO <sub>2</sub> H <sub>3</sub> C CH <sub>3</sub>	From proton affin PA = 198.4 kcal/r	164 687 ity of 2,4,6-(CH <sub>3</sub> ) <sub>3</sub> C <sub>6</sub> H <sub>2</sub> nol, 830. kJ/mol.	NO <sub>2</sub> (RN 603	3-71-4) (84ROL	/HOU).	
( CH COOH )	H From proton affin PA = 216.5 kcal/n	74 311 ity of L-C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> CH(N nol, 906. kJ/mol.	н <sub>2</sub> )соон (	RN 150-30-1).		
С9H <sub>12</sub> NO <sub>3</sub> + ( СССОН )	H <sup>+</sup> From proton affin	27 114 ity of L-tyrosine. PA = 2	222.3 kcal/mo	l, 930. kJ/mol.		
C <sub>9</sub> H <sub>12</sub> N <sub>2</sub> O <sub>4</sub> +  H <sub>3</sub> C	(≤8.78) IP from 81CAU/G	(≤103) (≤432) NA.	-99	-415	*EST	
0 <sub>2</sub> N CH <sub>3</sub> H <sub>3</sub> C COOC <sub>2</sub> H <sub>5</sub>	(≤8.76) IP from 81CAU/G	(≤103) (≤430) IA.	-99	-415	*EST	
						<del></del>

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C9H <sub>12</sub> N <sub>2</sub> O <sub>6</sub> +	(9.0)	(142)	(593)	-66	-275	*EST	58-96-8
С <sub>9</sub> H <sub>12</sub> O +	(≤8.32)	(≤159)	(s665)	-33	-138	*EST	2741-16-4
СH <sub>3</sub> ос <sub>2</sub> H <sub>5</sub>	(8.0) IP from 81BAK/A	(152) .RM.	(637)	-32	-135	•EST	614-71-1
CH <sub>3</sub> OCH <sub>3</sub> CH <sub>3</sub>	8.10±0.02	(161)	(674)	-26	-108	*EST	1004-66-6
C <sub>9</sub> H <sub>12</sub> OS + O O O O O O O O O O O O O O O O O O	(≤8.56) IP from 81MOH/J		(≤752)	-18	-74	•EST	6378-07-0
С9H <sub>12</sub> O <sub>2</sub> + осн <sub>3</sub> осн <sub>3</sub>	(≤7.95)	(≤122)	(≤511)	-61	-256	*EST	494-99-5
СН3 СН3	(9.0) IP is onset of photo	(143) pelectron ba	(599) and (80FRO/W	-64 /ES).	-269	*EST	38476-46-9

Table 1. Positive Ion Table - Continued

			e ion table	Contin			
ION Neutral	Ionization potential	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>12</sub> O <sub>2</sub> S <sup>+</sup>	(9.21±0.03)	(136)	(570)	−76.3±0.5	-319±2	*EST	13596-75-3
	(9.1) IP is onset of phor	(176) toelectron b	(735) eand (84AIT/GO	-34 S).	-143	*EST	
	(9.4) IP is onset of pho	(183) toelectron b	(764) eand (84AIT/GO	-34 S).	-143	*EST	
С <sub>9</sub> H <sub>12</sub> S + S-(CH <sub>2</sub> ) <sub>2</sub> CH <sub>3</sub>	(7.81±0.03)	(194)	(811)	14	57	*EST	874-79-3
SCHICH312	(7.9) IP is onset of phot	(195) coelectron b	(814) vand.	12	52	*EST	3019-20-3
H <sub>3</sub> C SC <sub>2</sub> H <sub>5</sub>	(≤7.92)	(≤193)	(≤808)	11	44	*EST	34786-24-8
н <sub>3</sub> С	(8.0) IP is onset of photographic	(195) toelectron b	(816) and.	11	44	*EST	622-63-9
C9H <sub>12</sub> Se <sup>+</sup> CH <sub>3</sub> SeC <sub>2</sub> H <sub>5</sub>	(7.3) IP is onset of phot	(193) toelectron b	(806) and (81BAK/AR	24 LM).	102	*EST	37773-42-5

Table 1. Positive Ion Table - Continued

			e ion Table	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>12</sub> Se +							
CH <sub>3</sub> -SeC <sub>2</sub> H <sub>5</sub>	(7.1) IP is onset of pho	(187) toelectron b	(784) pand (81BAK/AF	24 RM).	99	*EST	37773-43-6
SeCH(CH <sub>3</sub> ) <sub>2</sub>	(≤8.3) IP from 81BAK/A	(≤217) ARM.	(≤908)	26	107	*EST	22233-89-2
C <sub>9</sub> H <sub>13</sub> +		·		<u>-</u>			
н <sub>3</sub> с Сн <sub>3</sub>	From proton affin 840. kJ/mol.	161 aity of 1,3,5-(	674 (CH <sub>3</sub> ) <sub>3</sub> C <sub>6</sub> H <sub>3</sub> (R	N 108-67-8).	PA = 200.7 kca	l/mol,	
н2 СН2СН2СН3	From proton affin 805. kJ/mol.	175 uity of n-C <sub>3</sub> I	733 H <sub>7</sub> C <sub>6</sub> H <sub>5</sub> (RN 103	3-65-1). PA	= 192.4 kcal/mol	,	
H <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	From proton affin 804. kJ/mol.	175 hity of i-C <sub>3</sub> H	730 I <sub>7</sub> C <sub>6</sub> H <sub>5</sub> (RN 98-6	32-8). PA =	192.1 kcal/mol,		
C <sub>9</sub> H <sub>13</sub> N <sup>+</sup>					`		
H <sub>3</sub> C CH <sub>3</sub>	(7.15) See also: 83CET/I	(164) LAP	(686)	-1	<b>-4</b>	*EST	88-05-1
O NHS	(≤8.89±0.12)	(≤216)	(≤902)	11	44	*EST	2038-57-5
CH3 NH2	(8.5) IP is onset of phot	(203) oelectron ba	(849) and.	7	29	*EST	300-62-9

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>9</sub> H <sub>13</sub> N <sup>+</sup>										
O H OH	(8.4) IP is onset of phot	(205) oelectron b	(857) and.	11	47	*EST	589-08-2			
H <sub>3</sub> C CH <sub>3</sub>	(7.34)	(182)	(763)	13	55	•EST	767-71-5			
CH2NCH312	7.69 See also: 81LOG/	(197) ГАК, 79AU	(826) JE/BOW.	20	84	*EST	103-83-3			
N(CH <sub>3</sub> ) <sub>2</sub> CH <sub>3</sub>	7.40±0.02	(195)	(813)	24	99	*EST	609-72-3			
N(CH <sub>3</sub> ) <sub>2</sub>	7.02 IP from charge tra Reference standar				67 ns (85LIA/JAC).	*EST	121-72-2			
N(CH <sub>3</sub> ) <sub>2</sub>	6.93 IP from charge tra Reference standard				70 ns (85LIA/JAC, 8	*EST 84MAU/NEL);	99-97-8			
C(CH <sub>3</sub> ) <sub>3</sub>	(≤9.30±0.05)	(≤222)	(≤929)	8	32	*EST	3978-81-2			
C <sub>9</sub> H <sub>13</sub> NO <sup>+</sup>										
(CH3)3C NO	(7.8) IP is onset of photo	(169) belectron ba	(705) and.	-11	<del>-4</del> 8	*EST	23569-17-7			

Table 1.	Positive	Ion Table	_	Continued	

			ve ion tabl	e - Contin			
ION Neutral	Ionization potential eV	•	on) kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>13</sub> NO <sub>2</sub> + CH <sub>3</sub> H <sub>3</sub> C N COOC <sub>2</sub> H <sub>5</sub>	(≤7.91) IP from 81CAU/	(≤87) GIA.	(≤363)	-96	-400	*EST	
H <sub>3</sub> C COOC <sub>2</sub> H <sub>5</sub>	(≤7.95) IP from 81CAU/	(≤88) GIA.	(≤367)	<del>-9</del> 6	-400	*EST	
C9H <sub>13</sub> N <sub>2</sub> O <sub>6</sub> + 0	H+ <sup>From proton affi</sup>	–66 nity of uridi	-275 ne (RN 58-96-	8) PA = (208)	kcal/mol, (87	0) kJ/mol.	
С <sub>9</sub> H <sub>13</sub> O <sub>3</sub> + H <sub>3</sub> CO ОСН <sub>3</sub>	From proton affi 923. kJ/mol.	55 nity of 1,3,5-	228 C <sub>6</sub> H <sub>3</sub> (OCH <sub>3</sub> )	) <sub>3</sub> (RN 621-23-{	3) PA = 220.	6 kcal/mol,	
C9H <sub>14</sub> +  H <sub>3</sub> C  CH <sub>3</sub> CH <sub>3</sub>	7.8±0.1	(183)	(768)	4	15	*EST	4249-10-9
H <sub>3</sub> C CH <sub>3</sub>	7.84±0.05	(183)	(765)	2	9	*EST	4249-11-0
	(8.0) IP is onset of pho	(195) toelectron b	(817) and.	11	45	81MAI/SCH	17530-61-9
	(8.7) IP is onset of pho	(200) toelectron b	(835) and.	-1±0.7	-4±3	83JOC/DEK	7124-86-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
С <sub>9</sub> H <sub>14</sub> +	(≤8.87)	(≤202)	( <b>≤</b> 847)	-2±0.7	-9±3	77PED/RYL	2972-20-5
	(8.3) IP is onset of pho	(210) stoelectron b	(879) and (82SPA)	19 'GLE).	78	•EST	81969-71-3
	(8.2) IP is onset of pho	(208) stoelectron b	(869) and (82SPA)	- 19 (GLE).	78	•EST	81969-72-4
	(≤9.65±0.03)	(≤236)	( <b>≤</b> 987)	13	56	73ENG/AND	16526-28-6
	(8.8) IP is onset of pho	(211) stoelectron b	(884) and.	8	35	73ENG/AND	16526-27-5
$\Diamond \Diamond$	(8.73)	(208)	(872)	7	30	•EST	873-12-1
$\Rightarrow$	(8.3) IP is onset of pho	(237) stoelectron b	(993) and (82SPA/	46 GLE).	192	•EST	24973-90-8



(158) (660)  $CH_2NCH_3^{12}$ From proton affinity of  $C_6H_5CH_2N(CH_3)_2$  (RN 103-83-3). PA = 228.1 kcal/mol, 954. kJ/mol.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	$\Delta_{f}H(\text{Neutral})$ kcal/mol kJ/mol	Neutral reference	CAS registry
C9H <sub>14</sub> N <sup>+</sup>		157 658 nity of 3-CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> N(CH <sub>3</sub>			
(H3C NICH3)2	H+ From proton affin 944. kJ/mol.	157 656 nity of 4-CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> N(CH <sub>3</sub>	) <sub>2</sub> (RN 99-97-8). PA =	225.6 kcal/mol,	
( C2H3 )	н+ From proton affin 950. kJ/mol.	(156) (651) hity of C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> )(C <sub>2</sub> H	<sub>5</sub> ) (RN 613-97-8). PA =	= 227.1 kcal/mol,	
H5C2 N C2H5	From proton affin 967. kJ/mol.	(139) (582) ity of 2,6-diethylpy <del>ri</del> dine (	RN 935-28-4). PA = 2:	31.1 kcal/mol,	
CICH <sup>3</sup> ) <sup>3</sup>	From proton affin (951.) kJ/mol.	(145) (607) ity of 2-tert-butylpyridine	(RN 5944-41-2). PA =	(227.4) kcal/mol,	
H_N C(CH3)3	From proton affin 945. kJ/mol.	(147) (616) ity of 4-tert-butylpyridine	(RN 3978-81-2). PA =	225.9 kcal/mol,	
С9H <sub>14</sub> O + H <sub>3</sub> C СН <sub>3</sub>	(≤9.07) IP from 82PFI/GE	(≤160) (≤669) R.	<b>-</b> 49 <b>-</b> 206	*EST	78-59-1
СНЗ	(8.6) IP is onset of photo	(144) (603) pelectron band (80FRO/W	–54 –227 /ES).	•EST	13211-15-9

Table 1. Positive Ion Table - Continued

	Table .	L. FUSILI	ve ion table -	Contin	ueu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>14</sub> O +  H <sub>3</sub> C  H <sub>3</sub> C  O	(8.75) IP is onset of pho	(148) coelectron	(617) band (80FRO/WE	−54 (S).	-227	*EST	38476-45-8
C <sub>9</sub> H <sub>14</sub> O <sub>2</sub> + H <sub>3</sub> C H <sub>3</sub> C OCH <sub>3</sub>	(≤9.35) IP from 82PFI/GE	(≤138) 3R.	(s576)	-78	-326	*EST	4683-45-8
C9H <sub>14</sub> SSi +  —S—SKCH <sub>3</sub> ) <sub>3</sub>	(8.67±0.05)	(166)	(696)	-34	-141	*EST	4551-15-9
С9H <sub>14</sub> Si <sup>+</sup> —SкСН <sub>3</sub> уз	8.22 IP is onset of pho	(168) toelectron	(704) band (82TRA/RE	-21 D).	-89	•EST	768-32-1
C9H <sub>14</sub> Sn + Sn(CH <sub>3</sub> ) <sub>3</sub>	8.83±0.05	231	965	27±1	113±5	77PED/RYL	934-56-5
$\frac{C_9H_{15}N^+}{(CH_2=CHCH_2)_3N}$	(7.5) IP is onset of photo	(226)	(948) band. See also: 79	54 AUE/BOW	224 '.	*EST	102-70-5
N	(≤7.46) IP from 81MUL/I	(≤197) PRE2.	(≤826)	25	106	*EST	7326-44-5
~ N	7.1 IP from 79AUE/E	(164) BOW.	(686)	0.2	1	*EST	7148-07-4

Table 1. Positive Ion Table - Continued

Neutral	Ionization potential		ion) I kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C9H <sub>15</sub> N+	(7.57±0.02)	(165)	(692)	-9	-38	•EST	281-27-6
C9H <sub>15</sub> NO +	(≤8.11) IP from 82PFI/G	(≤144) ER.	(≤602)	<b>~</b> 43	-180	•EST	701-58-6
C9H <sub>15</sub> N <sub>2</sub> O <sub>6</sub> + 0 0 NH 0 NH 0 NH 0	From proton affi (870) kJ/mol.	-76 nity of 5,6-d	-317 ihydrouridine (R	N 5627-05-4]	). PA = (208) kc	al/mol,	
C <sub>9</sub> H <sub>16</sub> + (E)-n-C <sub>5</sub> H <sub>11</sub> CH = CHCH =	= CH <sub>2</sub> (8.44) IP from 81MAS/I	(193) MOU.	(809)	-1	-5	*EST	56700-77-7
1-C <sub>9</sub> H <sub>16</sub>	(9.93±0.02)	(244)	(1020)	15±0.7	62±3	79ROG/DAG	3452-09-3
2-C <sub>9</sub> H <sub>16</sub>	9.30±0.02	225	941	11±1	44±3	79ROG/DAG	19447-29-1
3-C <sub>9</sub> H <sub>16</sub>	9.20±0.01	222	930	10±0.7	42±3	79ROG/DAG	20184-89-8
4-C <sub>9</sub> H <sub>16</sub>	(9.17±0.03)	(221)	(927)	10±0.7	42±3 ~	79ROG/DAG	20184-91-2
(CH <sub>2</sub> ) <sub>7</sub> (CH CH	(8.81±0.15)	(190)	(795)	-13	-55	78GRE/LIE	933-21-1
H	≤9.36	≤210	≤878	-6.0±0.3	-25.2±1.4	84WIB/LUP	39124-79-3
₩.	(≤9.4)	(≤211)	(≤884)	-5.5±0.2	-23±1	77PED/RYL	286-60-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>9</sub> H <sub>16</sub> <sup>+</sup>	(9.46±0.06) IP from 80MIK/2	(187) ZAI.	(782)	-31±0.5	-131±2	77PED/RYL	3296-50-2
Ŭ, H,	(9.46±0.06) IP from 80MIK/Z	(188) ZAI.	(786)	-30±0.5	-127±2	77PED/RYL	4551-51-3
4	(9.35)	(185)	(774)	-31±1	-128±3	77PAR/STE	280-65-9
	(9.0) IP is onset of pho	(183) toelectron b	(765) and.	-25	-103	, 81MAI/SCH	283-19-2
C <sub>9</sub> H <sub>16</sub> CIN+  CH <sub>3</sub> CH <sub>3</sub>	(≤8.34) IP from 82NEL/G	(≤179) 3AN.	(≤748)	-14	-57	*EST	82666-06-6
C <sub>9</sub> H <sub>16</sub> N + (CH <sub>2</sub> =CHCH <sub>2</sub> ) <sub>3</sub> NH	From proton affin 962. kJ/mol.	(189) ity of (CH <sub>2</sub>		N (RN 102-70-5)	). PA = 230	0 kcal/mol,	
C <sub>9</sub> H <sub>16</sub> NO <sub>2</sub> + O CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	7.40±0.05	120	499	-51±2	-215±7	<i>77</i> PED/RYL	2896-70-0
C <sub>9</sub> H <sub>17</sub> N <sup>+</sup>	(8.23)	(183)	(763)	-7	-31	*EST	6407-36-9

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H( ext{Ion})$ $\Delta_f H( ext{Neutral})$ Neutral CAS regi								
Neutral	eV		kJ/mol		kJ/mol	reference	CAS registry number		
C <sub>9</sub> H <sub>17</sub> N <sup>+</sup>	······	····							
CH=C(CH <sub>3</sub> ) <sub>2</sub>	(≤7.93±0.03) See also: 81MUL	(≤172) √PRE2.	(≤717)	-11	<del>-</del> 48	*EST	673-33-6		
	≤7.46 IP from 81MUL/	(≤160) PRE2.	(≤670)	-12	-50	*EST	7182-10-7		
	(≤7.29) IP from 81MUL/	(≤164) PRE2.	(≤688)	-4	-15	*EST	13750-57-7		
C <sub>9</sub> H <sub>17</sub> NO +									
(CH3)2 (CH3)2	(7.74)	(113)	(474)	-65±1	−273±4	77PED/RYL	826-36-8		
C9H <sub>17</sub> NO <sub>2</sub> + 0 CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(8.51±0.05)	(125)	(523)	−71±1	−298±5	77PED/RYL	3637-11-4		
CN OCH3	(≤7.9) IP from 79AUE/E		(≤436)	<b>-78</b>	-326	*EST			
C <sub>9</sub> H <sub>18</sub> <sup>+</sup> 1-C <sub>9</sub> H <sub>18</sub>	(9.42±0.01)	(192)	(805)	-25±0.2	-104±1	74ROG/KAN	124-11-8		
$n-C_4H_9C(CH_3) = C(CH_3)_2$	(8.14±0.01)	(157)	(655)	-31	-131	*EST	3074-64-4		
(E)- $C_3H_7C(CH_3) = C(CH_3)$	)C <sub>2</sub> H <sub>5</sub> (8.08±0.01)	(155)	(649)	-31	-130	*EST	3074-67-7		
(Z)-2-C <sub>9</sub> H <sub>18</sub>	(8.90±0.01)	(179)	(748)	-26	-111	*EST	6434-77-1		
(E)-2-C <sub>9</sub> H <sub>18</sub>	(8.90±0.01)	(178)	(745)	-27	-114	*EST	6434-78-2		

Table 1. Positive Ion Table - Continued

	Table	1. Posi	tive Ion Tabl	e - Contin	ued ————		
ION Neutral	Ionization potential eV	•	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>18</sub> + (Z)-3-C <sub>9</sub> H <sub>18</sub>	(8.84±0.01)	(178)	(743)	-26	-110	*EST	20237-46-1
(E)-3-C <sub>9</sub> H <sub>18</sub>	8.84±0.01	(177)	(739)	-27	-114	*EST	20063-92-7
(Z)-4-C <sub>9</sub> H <sub>18</sub>	(8.80±0.01)	(177)	(739)	-26	-110	*EST	10405-84-2
(E)-4-C <sub>9</sub> H <sub>18</sub>	(8.81±0.01)	(176)	(736)	-27	-114	*EST	10405-85-3
CH3	(10.21) IP from 81HER/S	(196) SIC.	(818)	<b>-40</b>	-167	•EST	13151-51-4
CH <sub>3</sub>	(10.31) IP from 81HER/S	(196) SIC.	(820)	<del>-4</del> 2	-175	*EST	13151-50-3
CH <sub>3</sub>	(10.41) IP from 81HER/S	(197) IC.	(824)	<b>-</b> 43	-180	*EST	13151-53-6
(۲۳۶۱۶۲۲۹	(9.46) From charge trans IP's of fluorobenz	-	(720) brium constant		−192.7±0.7 ). Reference sta	77PED/RYL andards,	1678-92-8
Снссн315	(9.33) From charge trans IP's of fluorobenz	-				*EST andards,	696-29-7
C <sub>2</sub> H <sub>5</sub>	(9.34) From charge trans IP's of fluorobenze	-	(706) brium constants	-47±0.5 s (82SIE/MAU)	-195±2 . Reference sta	77PED/RYL andards,	4926-90-3
C <sub>2</sub> H <sub>5</sub>	(9.32) From charge trans IP's of fluorobenzo	-	(704) brium constants	-47±0.5 s (82SIE/MAU)	-195±2 . Reference sta	77PED/RYL	4923-78-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(Io		Λ.ΜΝ	autro!)	Neutral	CAS manietum
Neutral	eV	kcal/mol		Δ <sub>f</sub> H(No kcal/mol	kJ/mol	reference	CAS registry number
C <sub>9</sub> H <sub>18</sub> <sup>+</sup> H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub>	9.39 IP from charge tra standards, IP's of			-56.2 s (82SIE/MA	-235.1 AU). Reference	69STU/WES	3073-66-3
н <sub>3</sub> с -сн <sub>3</sub>	(9.38) IP from 82SIE/MA	(166) AU.	(695)	-50	-210	*EST	2234-75-5
—(СН <sub>2</sub> )3СН3	(9.95±0.03)	(189)	(792)	<b>~</b> 40	-168	71ASTM	2040-95-1
C <sub>9</sub> H <sub>18</sub> N <sup>+</sup>							
(CH-CICH32) H+	From proton affin PA = (230.7) kcal			tene (RN 67	73-33-6).		
C <sub>9</sub> H <sub>18</sub> NO +				· · · · · · · · · · · · · · · · · · ·			
(CH3)2 (CH3)2	(6.73)	(181)	(757)	26±2	108±10	*EST	2564-83-2
C9H <sub>18</sub> NO <sub>2</sub> + OH OH CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.4±0.1)	(101)	(423)	-70±2	−291±9	77PED/RYL	2226-96-2
OCH <sub>3</sub> OCH <sub>3</sub>	From proton affin PA = (232) kcal/n	(56) ity of 3,3-di nol, (971) kl	(233) methoxy-1-azabi I/mol.	cyclo[2.2.2]c	octane.		

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Table 1. Positive Ion Table - Continued

•	Table	1. Positi	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry
C9H <sub>18</sub> N <sub>2</sub> +	7.0 IP is onset of pho	(166)	(694) Dand (85HON/Y	5 AN).	19	*EST	
	7.0 IP is onset of phor	(157)	(656)	<b>-</b> S	-19	*EST	
H3C-N N-CH3	(6.8) IP is onset of photo	(164) toelectron l	(685) pand (81LIV/RO	- 7 B).	29	*EST	14789-33-4
С <sub>9</sub> H <sub>18</sub> O + п-С <sub>7</sub> H <sub>15</sub> СОСН <sub>3</sub>	(9.16) IP from 81HOL/F	(130) IN.	(542)	-81±0.5	-340±2	78SEL/STR2	821-55-6
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> CO	(9.07) IP from 81HOL/F	(127) IN.	(530)	-82.4±0.3	-344.9±1.2	77PED/RYL	502-56-7
(iso-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> CO	9.04±0.03	123	515	-85.5±0.3	-357.6±1.1	77PED/RYL	108-83-8
(t-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> CO	8.67±0.02	117	491	-82.6±0.3	-345.8±1.1	77PED/RYL	815-24-7
C <sub>9</sub> H <sub>19</sub> + (n-C <sub>4</sub> H <sub>9</sub> )(n-C <sub>3</sub> H <sub>7</sub> )(CH <sub>3</sub> )C	From appearance	133 potential m	556 neasurement (841	.OS/HOL).		84LOS/HOL	92056-65-0
C <sub>9</sub> H <sub>19</sub> N <sup>+</sup> H <sub>3</sub> C  H <sub>3</sub> C  CH <sub>3</sub> CH <sub>3</sub>	7.59 IP from 82ROZ/H	137 IOU, 79AU	572 FE/BOW.	−38±0.7	-160±3	81SUR/HAC	768-66-1
C <sub>9</sub> H <sub>19</sub> N <sub>2</sub> +	From proton affin 972. kJ/mol.	166 ity of 1,5-di	696 azabicyclo[3.3.3]ı	indecane. P	A = 232.4 kcal,	'mol,	

Table 1. Positive Ion Table - Continu	me	nti	Con	_	Table	Ion	<b>Positive</b>	1.	able	T
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	Table	1. Positi	ve Ion Tabl	e - Contin	ued ——————		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C9H <sub>19</sub> O <sup>+</sup> (tert-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> COH	From proton affir 864. kJ/mol.	77 ity of (tert	320 -C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> CO (I	RN 815-24-7). I	PA = 206.5 kca	ıl/mol,	
С9H <sub>20</sub> <sup>+</sup> п-С <sub>9</sub> H <sub>20</sub>	(9.72)  IP from charge transtandards, fluorob		(709) <i>(761)</i> librium consta	-42.3±0.1	−228.4±0.6 <i>−177.1±0.6</i> IE, 82LIA). Ref	74SCO ference	111-84-2
С <sub>9</sub> H <sub>20</sub> N + (H <sub>3</sub> C	From proton affir PA = (231.7) kca	-		piperidine (RN	768-66-1).		
C <sub>9</sub> H <sub>21</sub> BO <sub>3</sub> + (n-C <sub>3</sub> H <sub>7</sub> O) <sub>3</sub> B	(10.02)	(-26)	(-109)	-257±1	-1076±5	77PED/RYL	688-71-1
C <sub>9</sub> H <sub>21</sub> N <sup>+</sup> (n-C <sub>3</sub> H <sub>7</sub> ) <sub>3</sub> N	(7.4) IP is onset of photo	(132) oelectron t	(552) pand.	-38±0.2	−161±1	*EST	102-69-2
tert-C <sub>5</sub> H <sub>11</sub> (tert-C <sub>4</sub> H <sub>9</sub> )NH	(7.81 $\pm$ 0.1) $\Delta_f H$ (Ion) predicte 548 kJ/mol. Corre	_	-	-46±1 es of secondary	−191±4 amines: 131 kca	*EST al/mol,	58471-09-3
C <sub>9</sub> H <sub>22</sub> N <sup>+</sup> (n-C <sub>3</sub> H <sub>7</sub> ) <sub>3</sub> NH	From proton affin 979. kJ/mol.	(93) ity of (n-C	(390) <sub>3</sub> H <sub>7</sub> ) <sub>3</sub> N (RN 1	02-69-2). PA =	= 234.0 kcal/mo	ıl,	
(tert-C <sub>4</sub> H <sub>9</sub> )C(CH <sub>3</sub> ) <sub>2</sub> NH(C	CH <sub>3</sub> ) <sub>2</sub> From proton affin PA = 235.1 kcal/r			) <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub> (RI	N 3733-36-6).		
(tert-C <sub>5</sub> H <sub>11</sub> )(tert-C <sub>4</sub> H <sub>9</sub> )N	From proton affin PA = 232.5 kcal/n			C <sub>4</sub> H <sub>9</sub> )NH (RN	58471-09-3).		
С <sub>9</sub> H <sub>22</sub> OP <sup>+</sup> (i-С <sub>3</sub> H <sub>7</sub> ) <sub>3</sub> РОН	From proton affin PA = 227.5 kcal/n	-		17513-58-5) (85	BOL/HOU).		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>9</sub> H <sub>25</sub> N <sub>3</sub> OP <sup>+</sup> HOP(CH <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>3</sub>	From proton affir PA = 235. kcal/m			<sub>3</sub> (RN 2327-88-	0) (85BOL/H	OU).	
C9H <sub>27</sub> NSi3 <sup>+</sup> ((CH <sub>3</sub> ) <sub>3</sub> Si) <sub>3</sub> N	(≤8.60)	(≤38)	(≤160)	-160±3	-670±12	77PED/RYL	1586-73-8
C <sub>10</sub> BrCo <sub>3</sub> O <sub>9</sub> +	7.8 IP is onset of pho	-81 coelectroi	-337 n band (81CHE/	–261±2 HAL, 82COS/I	−1090±9 .LO). See als	82PIL/SKI o: 82GRA/TON.	19439-14-6
C <sub>10</sub> ClCo <sub>3</sub> O <sub>9</sub> + c <sub>1</sub> c <sub>1</sub> c <sub>2</sub> c <sub>2</sub> c <sub>2</sub> c <sub>3</sub> c <sub>4</sub> c <sub>5</sub> c <sub>6</sub>	7.8 IP is onset of pho	-76 coelectron	–316 n band (81CHE/	-255±2 HAL, 82GRA/	–1069±10 FON, 82COS/	82PIL/SKI LLO).	13682-02-5
C <sub>10</sub> F <sub>8</sub> +  F F F F F F	8.85 IP from 84HOH/I	(-88) DIS, 82LE	(-368) BV/LIA.	-292	-1222	*EST	313-72-4
C <sub>10</sub> H <sub>4</sub> Cl <sub>2</sub> O <sub>2</sub> +	(9.5) IP is onset of pho	(180) coelectron	(754) 1 band (80RED/)	-39±2 FRE).	-162±10	*EST	117-80-6
C <sub>10</sub> H <sub>5</sub> ClO <sub>2</sub> <sup>+</sup>	(9.6) IP is onset of phot	(189) coelectron	(789) 1 band (80RED/)	-33 FRE).	-137	*EST	1010-60-2
C <sub>10</sub> H <sub>5</sub> NO <sub>5</sub> W <sup>+</sup>	7.53±0.05	29	121	-145	-606	84ALT/CON2	14586-49-3

Table 1. Positive Ion Table - Continued

	Table	I. FUSILIY	ve ion Table	Contin	ucu		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>6</sub> +	(8.69±0.02)	(329)	(1378)	129	540	*EST	21792-52-9
C=CH	(8.82±0.02)	(332)	(1390)	129	539	*EST	1785-61-1
нс≡сО-с≡сн	(8.58±±0.02)	(327)	(1368)	129	540	*EST	935-14-8
C <sub>10</sub> H <sub>6</sub> Cl <sub>2</sub> N <sub>2</sub> +	(8.8) IP is onset of photon	(257) toelectron b	(1074) eand (83DOB/HI	54 L).	225	*EST	1762-41-0
C <sub>10</sub> H <sub>6</sub> N <sub>2</sub> +	7.7 IP is onset of phot	(309) toelectron b	(1294) and (85YAM/HI	132 G).	551	*EST	
	8.3 IP is onset of phot	(323) sociectron b	(1352) and (85YAM/HI	132 G).	551	•EST	
C <sub>10</sub> H <sub>6</sub> O <sub>2</sub> +	9.56±0.01 See also: 80RED/I	194 FRE.	811	-27±1	-111±4	77PED/RYL	130-15-4

Table 1. Positive Ion Table - Continued

		1. 1 031111	e Ion Table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>6</sub> S <sup>+</sup>	(8.0) IP is onset of phot	(262) toelectron t	(1096) pand (81BOC/BR	77 LA).	324	*EST	3968-63-6
C <sub>10</sub> H <sub>6</sub> SSe <sup>+</sup>	(≤7.14) IP from 81BOC/B	(≤236) BRA.	(≤986)	71	297	*EST	64869-35-8
C <sub>10</sub> H <sub>6</sub> S <sub>2</sub> <sup>+</sup>	7.14 IP from 81BOC/B	(222) RA, 82LEV	(931) V/LIA.	58	242	*EST	209-22-3
Se—Se	(7.06) IP from 81BOC/B	(247) RA.	(1033)	84	352	•EST	36579-71-2
C <sub>10</sub> H <sub>7</sub> Br <sup>+</sup>	(8.09) IP from 83KLA/K	(228) OV.	(954)	42	174	•EST	90-11-9
C <sub>10</sub> H <sub>7</sub> Cl <sup>+</sup>	(8.13) IP from 83KLA/K	(216) OV.	(904)	29±2	120±10	77PED/RYL	90-13-1
OO CI	(8.11) IP from 83KLA/K	(220) OV.	(920)	33±2	137±10	77PED/RYL	91-58-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(Ic	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>10</sub> H <sub>7</sub> F <sup>+</sup>	(8.15) IP from 83KLA/K	(200) COV.	(835)	12	49	*EST	321-38-0
OO F	(8.23) IP from 83KLA/K	(201) COV.	(843)	12	49	*EST	323-09-1
C <sub>10</sub> H <sub>7</sub> I +		<del></del>					
	(8.03) IP from 83KLA/K	(241) COV.	(1009)	56±2	234±9	77PED/RYL	76279-71-5
C <sub>10</sub> H <sub>7</sub> NO <sub>2</sub> +					<del> </del>		
NO <sub>2</sub>	8.60±0.01 See also: 83KLA/I	234 KOV.	980	36±1	150±5	77PED/RYL	86-57-7
OO NO2	8.65±0.02 IP from 83KLA/K	(232) OV, 82LEV	(970) //LIA.	32	135	*EST	581-89-5
C <sub>10</sub> H <sub>7</sub> NO <sub>2</sub> S +							
HOOC N	(8.6) IP from 84DEM/S	(168) SIM.	(705)	-30	-125	*EST	7113-10-2
HOOC S	(8.7) IP from 84DEM/S	(171) IM.	(714)	-30	-125	*EST	10058-38-5
			·····•				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>10</sub> H <sub>8</sub> +			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	(8.0) IP is onset of photon	(238) coelectron l	(997) band (81GLE/G	54 UB).	225	*EST	34305-47-0
	7.41±0.02	240	1004	69±0.7	289±3	77PED/RYL	275-51-4
	8.14±0.01	223.6	935.8	35.9±0.3	150.4±1	82COL/JIM	91-20-3
C <sub>10</sub> H <sub>8</sub> CrO <sub>3</sub> +  C C C C C C C	6.9±0.2	(108)	(452)	-51±2	-214±9	77PED/RYL	12125-72-3
оссо сн <sub>3</sub>	(6.6±0.2)	(61)	(257)	-91±1	-380±5	84ALT/CON	12083-24-8
С <sub>10</sub> H <sub>8</sub> CrO <sub>4</sub> +  ос ст со  ос ст со  осн <sub>3</sub>	(6.75±0.1)	(39)	(162)	-117	-489	84ALT/CON	12116-44-8
C <sub>10</sub> H <sub>8</sub> M <sub>0</sub> O <sub>3</sub> +  OC. OC	(7.0) IP is onset of phot	(111) oelectron t	(466) pand.	-50±1	−209±7	82PIL/SKI	12125-77-8

Table 1. Positive Ion Table - Continued

	Tubic	1. 1 031111	e ion Table -	Contin	<u></u>		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>8</sub> N <sub>2</sub> +							
	8.35±0.02 See also: 83DOB	(262) /HIL.	(1095)	69.1±1.2	289.0±5.2	85FAO/AKA	366-18-7
	(9.10±0.02)	(283)	(1182)	73	304	*EST	553-26-4
	(8.65) IP is onset of pho	(270) toelectron b	(1131) and (84BAR/CA	71 U).	296	*EST	3438-48-0
C <sub>10</sub> H <sub>8</sub> O +							
OH OH	7.76±0.03	172	719	-7.1±0.2	−29.9±1	77PED/RYL	90-15-3
<u>О</u> О он	7.85±0.05 IP from 85OIK/A	174 BE, 82LEV/	727 LIA.	-7.2±0.3	-30.3±1.2	77PED/RYL	135-19-3
	(7.9) IP is onset of phot	(230) coelectron ba	(962) and (84AND/CE)	48±2 ₹).	200±10	77PED/RYL	4759-11-9
C10H0O2+							
C <sub>10</sub> H <sub>8</sub> O <sub>2</sub> +	(9.3) IP is onset of phot		(1009) and (85GLE/JAH	27 ().	112	*EST	87258-06-8
C <sub>10</sub> H <sub>8</sub> S <sup>+</sup>							
s O	(8.06)	(235)	(981)	49	203	*EST	825-55-8
*****							· · · · · · · · · · · · · · · · · · ·

Table 1. Positive Ion Table - Continued

<u></u>	Tubic .	2. 1 03.61	e Ion Table	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>10</sub> Н <sub>9</sub> +	From proton affin	215 ity of azule	898 ne (RN 275-51-4)	). PA = 220	). kcal/mol, 921. I	cJ/mol.	
H <sub>2</sub>	From proton affin	207 lity of naph	865 thalene (RN 91-2	0-3). PA =	194.7 kcal/mol, 8	815. kJ/mol.	
C <sub>10</sub> H <sub>9</sub> BrO <sup>+</sup>	(8.7±0.05) IP from 79SCH/G	(202) RU, 80GR)	(843) U/SCH, 81SCH/0	1 GRO.	4	79SCH/GRU	
Br CH <sub>3</sub>	(8.9) IP from 81SCH/G	(206) RO.	(862)	1	4	•EST	65300-30-3
Br—CH	(8.9) 3 IP from 81SCH/G	(206) RO.	(863)	1	4	•EST	3815-31-4
C <sub>10</sub> H <sub>9</sub> CIO <sup>+</sup>	(8.8) IP from 80GRU/S	(190) CH, 81SCH	(795) I/GRO.	-13	-54	*EST	
CI CH3	(8.9) IP from 81SCH/G	(192) RO.	(805)	-13	-54	*EST	30626-02-9
CI-CH3	(8.7) IP from 81SCH/G	(188) RO.	(785)	-13	<b>-</b> 54	*EST	30626-03-0

Table 1. Positive Ion Table - Continued

Table 1. Fositive foil table - Continued											
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ickal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>10</sub> H <sub>9</sub> FO <sup>+</sup>											
OF <sub>FO</sub> CH <sub>3</sub>	(8.9) IP from 79SCH/G	(154) RU, 80GRI	(646) U/SCH.	-51	-213	79SCH/GRU	2143-80-8				
C <sub>10</sub> H <sub>9</sub> IO <sup>+</sup>		<del></del>			,M.,	<del></del>					
CH <sub>3</sub>	(8.6±0.05) IP from 81SCH/G	(214) RO. See als	(895) :o: 80GRU/SCH.	16	65	*EST					
I CH3	(8.7±0.05) IP from 81SCH/G	(214) RO.	(893)	13	54	*EST					
т Сн <sub>3</sub>	(8.4±0.05) IP from 81SCH/G	(207) RO.	(864)	13	54	•EST					
C II N+											
C <sub>10</sub> H <sub>9</sub> N <sup>+</sup>	(7.1) IP is onset of photo	(201) oelectron b	(843) and (83KLA/KO <sup>1</sup>	38±2 V).	158±7	77PED/RYL	134-32-7				
OO NH2	7.10±0.02 See also: 83KLA/k	196 COV.	821	32±3	136±12	77PED/RYL	91-59-8				
THE STATE OF THE S	7.75 IP from 84AND/C	(266) ER.	(1115)	88±2	367±7	77PED/RYL	4753-55-3				
C <sub>10</sub> H <sub>9</sub> NO <sup>+</sup>	(8.0) IP is onset of photo	(174) Delectron ba		-11	-45	•EST	606-43-9				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued												
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry					
C <sub>10</sub> H <sub>9</sub> NO <sub>2</sub> S +  NC — CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	O (9.0) O IP is onset of pho	(203) toelectron	(849) band (84CAU/FU	~4 JR).	-19	*EST	69957-44-4					
C <sub>10</sub> H <sub>9</sub> NO <sub>3</sub> + CH <sub>3</sub>	(9.0) IP from 80GRU/S	(198) SCH.	(827)	-10	<b>~41</b>	79SCH/GRU	20766-40-9					
C <sub>10</sub> H <sub>9</sub> O <sup>+</sup>	Δ <sub>f</sub> H(Ion) from ap	(147) opearance p	(617) potential determin	nations (79S	CH/GRU).		45883-76-9					
C <sub>10</sub> H <sub>10</sub> + CH <sub>2</sub>    CCH <sub>2</sub>	8.15±0.04 IP from 75DER/J	(237) OC, 83DA	(990) S/GRO.	49	204	*EST	2288-18-8					
CH2	8.06±0.07 IP from 74KOP/S	(235) CH, 83DA:	(982) S/GRO.	49	204	*EST	16939-57-4					
CH = CH <sub>2</sub>	(8.39)	(243)	(1017)	50	208	•EST	31915-94-3					
CEC-C2H5	8.35±0.02 IP from 82LEV/L	(259) IA, 81ELB	(1082) /LIE. See also: 7	66 4KOP/SCH.	276	*EST	622-76-4					
CH2-CEC-CH3	(8.6) IP from 74KOP/S	(260) CH.	(1089)	62	259	*EST	33598-22-0					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>10</sub> +	(8.5) IP from 74KOP/S	(263) CH.	(1099)	67	279	•EST	16520-62-0
	8.20±0.02 IP from 75DER/J	(249) OC, 82LEV	(1041) /LIA. See also: 8	60 33DAS/GRO	250 O.	*EST	3365-26-2
	(8.42) IP from 83DAS/G	(258) RO.	(1078)	64	266	*EST	20211-64-7
CH <sub>3</sub>	(8.3) IP from 84BAI/DO	(277) DM.	(1160)	86	359	*EST	65051-83-4
	8.07±0.04 IP from 83DAS/G	(214) RO, 74KOF	(897) /SCH.	28	119	77PED/RYL	447-53-0
CH <sub>3</sub>	(8.27) IP from 83DAS/GI	(226) RO.	(945)	35	147	*EST	767-59-9
Сн	8.05 IP from 83DAS/GI		(916) /SCH.	33	139	*EST	767-60-2
CH <sub>2</sub>	(8.00±0.02) See also: 83DAS/G		(921)	36	149	*EST	1194-56-5

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	cutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>10</sub> H <sub>10</sub> +											
CH <sub>2</sub>	(8.34) See also: 83DAS/	(230) GRO.	(964)	38	159	*EST	68846-65-1				
	(8.26) IP from 83DAS/G	(254) BRO.	(1065)	64	268	*EST					
	(8.6) IP is onset of phot	(252) coelectron l	(1054) band.	- 53.5±1	224±4	86LIE/PAQ	6053-74-3				
	(8.17)	(265)	(1107)	76	319	•EST	1610-51-1				
	(8.18)	(266)	(1114)	78	325	*EST	58436-35-4				
	8.09±0.05	266	1115	80±0.7	334±3	81MAN/SUN	1005-51-2				
	(8.3) IP is onset of photo	(310) oelectron b	(1298) pand (82HON/	119±5 EAT).	497±20	73ENG/AND	4572-17-2				
C <sub>10</sub> H <sub>10</sub> Br <sub>2</sub> Ti +											
Br Tı Br	≤8.8 IP from 82BOH. 5	(≤158) See also: 82	(≤663) £LEV/LIA.	-44	-186	*EST	1293-73-8				

Table 1. Positive Ion Table - Continued

Table 1. Tositive for Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>10</sub> H <sub>10</sub> Cl <sub>2</sub> Hf <sup>+</sup>	<u> </u>								
HILLORI	(8.5) IP is onset of phot	(93) oelectron b	(391) and.	-103±0.7	-429±3	82PIL/SKI	12116-66-4		
C <sub>10</sub> H <sub>10</sub> Cl <sub>2</sub> Ti +			······································						
π. Co	(8.2) IP is onset of phot	(126) oelectron b	(525) and. See also: 82	-64±2 BOH.	−266±9	82PIL/SKI	1271-19-8		
$\bigcirc$									
C <sub>10</sub> H <sub>10</sub> C <sub>0</sub> +									
	(5.2)	(193)	(809)	73±1	307±5	77PED/RYL	1277-43-6		
C <sub>10</sub> H <sub>10</sub> Cr <sup>+</sup>									
c¦.	5.50	184	772	58±1	241±5	77PED/RYL	1271-24-5		
Ó									
C <sub>10</sub> H <sub>10</sub> F <sub>3</sub> +									
C(CH <sub>3</sub> ) <sub>2</sub>		35	146						
F <sub>3</sub> C	From proton affini 835. kJ/mol.	ity of 4-CF <sub>3</sub>	C <sub>6</sub> H <sub>4</sub> C(CH <sub>3</sub> ) =	CH <sub>2</sub> (RN 5	5186-75-9). PA =	: 199.6 kcal/mol,			
C <sub>10</sub> H <sub>10</sub> F <sub>3</sub> NO +		······································							
F3C	(≤9.38) IP from 85GAL/G		(≤128)	-186	<b>-777</b>	*EST	25771-21-5		
C <sub>10</sub> H <sub>10</sub> Fe +			<u> </u>			<del></del>			
	6.747	213	893	58±0.7	242±3	77PED/RYL	102-54-5		
Fe Fe	IP from 82BAR/H			JU20.1	ar Taring	/			
<u></u>									

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Table 1. Positive Ion Table - Continued

	Table	1. Positiv	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number
$C_{10}H_{10}Mg^+$ $ \bigcirc \qquad \qquad$	(8.11)	(218)	(913)	31±2	131±8	77PED/RYL	1284-72-6
C <sub>10</sub> H <sub>10</sub> Mn +	6.55	217	909	66	277	82PIL/SKI	1271-27-8
C <sub>10</sub> H <sub>10</sub> N <sup>+</sup> NC - CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	From appearance	219 energy dete	915 erminations (86O	RL∕MIS).			
NH2 H+	From proton affin 907.5 kJ/mol.	187 hity of 1-nap	781 hthalenamine (R	N 134-32-7)	. PA = 216.9 kc	al/mol,	
C <sub>10</sub> H <sub>10</sub> N <sub>2</sub> + NH <sub>2</sub>	(6.74±0.02)	(194)	(815)	39	165	*EST	2243-62-1
H <sub>2</sub> N NH <sub>2</sub>	(6.65±0.02)	(199)	(835)	46	193	•EST	479-27-6
C <sub>10</sub> H <sub>10</sub> Ni +	6.2	228	955	85±1	357±5	77PED/RYL	1271-28-9

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(No		Neutral reference	CAS registry number				
C <sub>10</sub> H <sub>10</sub> O +	(8.8±0.05) IP from 79SCH/G	(197) RU, 81SC	(824) H/GRO, 80GRU,	-6 /SCH.	-25	79SCH/GRU	122-57-6				
C <sub>10</sub> H <sub>10</sub> OS + CH <sub>3</sub>	(≤8.40) IP from 82BEN/D	(≤134) UR.	(≤561)	60	-249	•EST	70445-88-4				
С <sub>10</sub> H <sub>10</sub> O <sub>2</sub> +	(8.65±0.05) IP from 84SCH.	(134)	(563)	-65	-272	84SCH	939-57-1				
нзс—С—СН3	(≤9.61) IP from 85GAL/G	(≤160) EER.	(≤670)	-61	-257	•EST	1009-61-6				
CH <sub>3</sub> CH <sub>3</sub>	(8.0) IP is onset of phot	(173) oelectron	(726) band.	-11	<b>-4</b> 6	*EST	60526-38-7				
	(≤9.25) IP from 85GLE/JA	(≤240) \H.	(≤1002)	26	110	*EST	94499-49-7				
£C.	(≤9.02) IP from 85ALB/H	(≤157) EL.	(≤656)	-51	-214	*EST	72590-52-4				
C <sub>10</sub> H <sub>10</sub> O <sub>3</sub> + COOH	(8.50±0.05) IP from 84SCH.	(102)	(427)	-94	-393	84SCH	1011-54-7				

Table 1. Positive Ion Table - Continued

<del></del>	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
С10Н10О4+	(9.64±0.07)	(66)	(276)	−156.2±4	-654±17	*EST	131-11-3			
С <sub>10</sub> H <sub>10</sub> Рь+	(≤7.55) IP from 82BAX/C	(≤308) COW, 82Ll	(≤1288) EV/LIA.	134	559	8SDEW/HOL	1294-74-2			
C <sub>10</sub> H <sub>10</sub> Ru +	(7.1) IP is onset of phot	(102) coelectron	(425) band.	-62	-260	*EST	1287-13-4			
C <sub>10</sub> H <sub>10</sub> V <sup>+</sup>	(6.4) IP is onset of phot	(196) oelectron	(822) band.	49±2	204±10	77PED/RYL	1277-47-0			
C <sub>10</sub> H <sub>11</sub> Cl+	(≤8.67)	(≤221)	(≤925)	21±1	88±4	*EST	63340-05-6			
С <sub>10</sub> H <sub>11</sub> Fe <sup>+</sup>	From proton affin PA = (210) kcal/n			ntadienyl) (RN	102-54-5).		•			
C <sub>10</sub> H <sub>11</sub> NO + C=NO CH <sub>3</sub>	≤8.37 IP is onset of phot	(≤238) oelectron	(≤998) band.	45	190	*EST	2904-57-6			

Table 1. Positive Ion Table - Continued

ION	Taninatian naturalist	A 77/7-		A 77/NI-		No. and	CACarainta
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Iα kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
$C_{10}H_{11}NO_5W^+$ $C_{10}H_{11}NO_5W^+$ $C_{10}H_{11}NO_5W^+$ $C_{10}H_{11}NO_5W^+$	(7.0) IP is onset of pho	(–33) toelectron b	(-140) pand.	-195	-815	84ALT/CON2	31082-68-5
C <sub>10</sub> H <sub>11</sub> N <sub>2</sub> <sup>+</sup> (NH <sub>2</sub> )  H <sup>†</sup>	From proton affir 936. kJ/mol.	188 nity of 1,8-di	787 aminonaphthaler	ne (RN 479-	27-6). PA = 223.	8 kcal/mol,	
C <sub>10</sub> H <sub>11</sub> Ni +	From proton affir PA = 223. kcal/m			ntadinyl) (R	N 1271-28-9).		
C <sub>10</sub> H <sub>11</sub> Ru +	From proton affir PA = (218) kcal/			lopentadien	yl) (RN 1287-13-	<b>1</b> ).	
C <sub>10</sub> H <sub>12</sub> +	(8.15) IP from onset of p	(213) photoelectro	(892) on band (81KOB/	25 'ARA).	106	*EST	1560-09-4
© c <sub>2</sub> H <sub>5</sub>	(8.0) IP from onset of p	(208) photoelectro	(873) on band (81KOB/	24 ARA).	101	*EST	1005-64-7
CC CH2	(8.6) IP from 78FU/DU	(225) JN.	(943)	27	113	*EST	768-56-9
C C CH3	(8.48) IP from 78FU/DL	(220) JN.	(918)	24	100	*EST	935-00-2

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>10</sub> H <sub>12</sub> +	(7.78±0.04) See also: 78FU/D	(199) UN.	(832)	19	81	85DAS/GRO	1587-04-8			
СH <sub>3</sub> СH <sub>3</sub>	(8.10±0.02)	(212)	(886)	25	104	•EST	2039-90-9			
CH <sub>2</sub> CH <sub>3</sub>	(7.4) IP from onset of p	(205) hotoelectro	(856) on band. See	34 also: 82DEW.	142	*EST	63238-49-3			
	(8.4) IP from onset of p	(226) hotoelectro	(946) on band.	33	136	*EST	4392-30-7			
<b>⊘</b> —	(8.4) IP from onset of p	(223) hotoelectro	(930) on band.	29±1	120±4	*EST	2214-14-4			
	8.47 See also: 80MAU.	201	841	6±0.5	24±2	77PED/RYL	119-64-2			
CH3	(8.47)	(205)	(856)	9	39	85DAS/GRO	767-58-8			
CH <sub>2</sub>	≤8.98	≤268	≤1123	61	257	80MAR/HEL	72569-84-7			

Table 1. Positive Ion Table - Continued

TON							
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>12</sub> +	(7.97)	(249)	(1042)	65	273	*EST	36456-22-1
	≤9.00	(≤238)	( <b>≤</b> 996)	30.5±1	128±4	86LIE/PAQ	31678-74-7
	(8.79±0.05)	(248)	(1038)	45±2	190±9	80ROT/KLA	77-73-6
	≤8.83±0.03	≤275	≤1152	72	300	80ROT/KLA	6574-77-2
	7.33±0.05	(260)	(1087)	91	380	*EST	36262-33-6
	(8.3) IP is onset of phot	(298) coelectron ba	(1246) and (82SPA/KOF	106 S).	445 _	*EST	54440-40-3
	(≤7.74)	(≤269)	(≤1125)	90	378	*EST	30353-70-9
C <sub>10</sub> H <sub>12</sub> Mo +	(≤6.4±0.1)	(≤220)	(≤920)	72±1	303±6	86SIM/BEA	1291-40-3

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral		H(Ion) nol kJ/mol		Veutral) ol kJ/mol	Neutral reference	CAS registry number				
C <sub>10</sub> H <sub>12</sub> N <sub>2</sub> +  CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(7.7) (211) IP is onset of photoelectro	(882) on band.	33	139	*EST	61-54-1				
C <sub>10</sub> H <sub>12</sub> N <sub>4</sub> +				***						
H <sub>3</sub> C N N CH <sub>3</sub>	(<8.6) (<249) IP from 84GLE/SPA2.	(≤1040)	50	210	•EST	6479-03-4				
C <sub>10</sub> H <sub>12</sub> O +			•							
С чсн <sub>2</sub> ) <sub>2</sub> сн <sub>3</sub>	9.06±0.02 178 IP is average of values fro	746 m 79MCL/TRA a		6 −128.2±2.4 NB.	77PED/RYL	495-40-9				
© C C C C C C C C C C C C C C C C C C C	(8.31) (186) IP from 81DAL/NIB.	(780)	<b>~</b> 5	-22	81DAL/NIB	1007-03-0				
HO H <sub>2</sub> C	(8.35) (189) IP from 81DAL/NIB.	(790)	-4	-16	81DAL/NIB	31729-66-5				
C <sub>10</sub> H <sub>12</sub> O <sub>2</sub> +  H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub>	(9.1) (150) IP from 80BOC/KAI, 82L	(626) EV/LIA.	-60	-252	*EST	527-17-3				
	(≤9.0) (≤180) IP is onset of photoelectro	(≤752) on band (85GLE/	−28 IAH).	-116	•EST	87305-43-9				
	(8.8) (175) IP from 85GLE/JAH.	(733)	-28	-116	*EST	87305-42-8				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mol	on) kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry number			
C <sub>10</sub> H <sub>12</sub> O <sub>2</sub> +			······································							
	(≤9.06) IP from 85ALB/F	(≤130) HEL.	(≤542)	-79	-332	•EST				
	(9.0±0.02) IP from 84OLI/FI	(216) LE.	(904)	9	36	*EST	4893-00-9			
C <sub>10</sub> H <sub>12</sub> O <sub>2</sub> S <sup>+</sup>										
H <sub>3</sub> C — CH <sub>3</sub> S 0	(8.3) IP is onset of photon	(146) toelectron t	(613) pand (84CAL	–45 J/FUR).	-188	*EST	77355-29-4			
C <sub>10</sub> H <sub>12</sub> O <sub>2</sub> Si <sup>+</sup>			<u> </u>							
O 51 CH,	(≤8.60) IP from 83ZYK/E	(≤151) RC.	(≤633)	<del>-</del> 47	-197	*EST	1578-44-5			
C <sub>10</sub> H <sub>12</sub> O <sub>3</sub> S +		<del> </del>			<del></del>					
H <sub>3</sub> CO — CH <sub>3</sub> CH <sub>3</sub> CO	(≤8.52) IP from 84CAU/F	(≤123) UR.	(≤516)	-73	<b>-3</b> 06	*EST	70784-98-4			
C <sub>10</sub> H <sub>12</sub> Se <sup>+</sup>					······································					
Se CH <sub>3</sub>	(7.3) IP is onset of photo	(144) Delectron b	(603) and (81BAK	-24 /ARM).	-101	•EST	60096-27-7			
C <sub>10</sub> H <sub>12</sub> W <sup>+</sup>	(6.35±0.2)	(221)	(924)	74±1	311±5	82PIL/SKI	1271-33-6			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry			
C <sub>10</sub> H <sub>13</sub> +			·	· · · · · · · · · · · · · · · · · · ·					
н <sub>3</sub> с сісн <sub>3</sub> )		(174) (727) ity of 4-CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> C(CH <sub>3</sub> )( om appearance energy dete			= 211.0 kcal/mol,				
(O) H+	From proton affin PA = 194.7 kcal/n	177 740 ity of 1,2,3,4-tetrahydronap nol, 815. kJ/mol.	hthalene (l	RN 119-64-2).					
C <sub>10</sub> H <sub>13</sub> Br <sup>+</sup>	· · · · · · · · · · · · · · · · · · ·					·			
Bt C(CH <sup>3</sup> ) <sup>3</sup>	8.50±0.02 IP from 86ORL/M	(198) (828) IIS, 85BAI/MIS.	2	8	86ORL/MIS	3972-65-4			
C <sub>10</sub> H <sub>13</sub> Cl <sup>+</sup>									
(CH <sub>3</sub> )3C	(8.56±0.02) IP from 86ORL/M	(184) (772) IIS. See also: 85BAI/MIS.	-13	<b>-</b> 54	86ORL/MIS	3972-56-3			
C <sub>10</sub> H <sub>13</sub> F <sup>+</sup>									
F	(8.59) IP from 85ORL/M	(146) (609) IS.	-52	-219	86ORL/MIS	701-30-4			
C <sub>10</sub> H <sub>13</sub> I +									
I—————————————————————————————————————	(8.35±0.02) IP from 86ORL/M	(206) (862) IS. See also: 85BAI/MIS.	14	57	86ORL/MIS	35779-04-5			
C <sub>10</sub> H <sub>13</sub> N <sup>+</sup>				<del></del>					
	(6.8) IP is onset of photo	(185) (773) Delectron band (82ROZ/HO	28 DU2).	117	*EST	4096-21-3			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>13</sub> N <sup>+</sup>	(7.1) IP is onset of phot	(222) toelectron b	(927) pand (82ROZ/HO	58 U2).	242	*EST	19198-94-8
	(≤7.80) IP from 82ROZ/F	(≤243) IOU2.	(≤1017)	63	265	*EST	78376-89-3
	(7.6) IP is onset of phot	(232) coelectron b	(969) and (82ROZ/HO	56 U2). See a	236 Iso: 82CRI/LIC.	*EST	78376-90-6
C <sub>10</sub> H <sub>13</sub> NO +  O H <sub>3</sub> C N C-CH <sub>3</sub>	≤7.55	(≤157)	(≤655)	-17	-73	*EST	2124-31-4
H <sub>3</sub> C	(≤8.90) IP from 85GAL/C	(≤175) JER.	(≤731)	-31	-128	*EST	14062-78-3
O <sub>2</sub> N————————————————————————————————————	(9.2) IP is onset of phot	(203) oelectron b	(850) and (85BAI/MIS2	9 2). See also	-38 : 86ORL/MIS.	85ORL/MIS	3282-56-2
0 Н3CO—О—С—ИСН3Ы2	≤8.40 IP from 85GAL/G	(≤135) ER.	(≤564)	-59	-246	•EST	7291-00-1
CH <sub>3</sub>	(≤8.01±0.06)	(≤136)	(≤570)	<b>–</b> 49	-203	*EST	51497-09-7

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Table 1. Positive Ion Table - Continued

ION	•	4					
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>13</sub> O + c(CH <sub>3</sub> )	From proton affir PA = 217.4 kcal/i (86ORL/MIS) =	mol, 910. kJ/	mol. Value from			nation	
C <sub>10</sub> H <sub>14</sub> +							
CH2)3CH3	8.69±0.01 IP at 298 K from c is 8.71±0.01 eV.	198 charge transi	827 fer equilibrium	-3.1±0.1 constant det	-13.2±0.6 erminations (781	77PED/RYL .IA/AUS)	104-51-8
CH <ch3< td=""><td>8.68±0.01</td><td>196</td><td>820</td><td>-4.1±0.2</td><td>−17.3±1</td><td>77PED/RYL</td><td>135-98-8</td></ch3<>	8.68±0.01	196	820	-4.1±0.2	−17.3±1	77PED/RYL	135-98-8
CH2-CH(CH3)2	8.68±0.01	195	816	-5.1±0.3	-21.5±1	77PED/RYL	538-93-2
C(CH <sub>3</sub> ) <sub>3</sub>	8.64±0.02 IP is average of va IP at 298 K from c (78LIA/AUS) is 8.	harge transf	er equilibrium	constant dete	erminations	<i>77</i> PED/RYL OW/GON.	98-06-6
H3C-СН(СН3)2	(8.29) IP from 84HOW/0	7011	(772)	-7	-28	*EST	99-87-6
Сн <sub>2</sub> сн <sub>3</sub>	≤8 <i>.</i> 51	≤192	≤804	-4±0.2	-17±1	77PED/RYL	135-01-3
C <sub>2</sub> H <sub>5</sub>	(8.49±0.01) IP is 298 K value fr	• •	(798) ransfer equilibi	−5 ium constan	−21 t determinations	77PED/RYL (78LIA/AUS).	141-93-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>14</sub> +							
H <sub>5</sub> C <sub>2</sub> C <sub>2</sub> H <sub>5</sub>	8.40 See also: 80GLE/	189 HOP.	790	-5±0.5	-20±2	77PED/RYL	105-05-5
СН <sub>3</sub> СН <sub>3</sub> СН <sub>3</sub>	8.16±0.02 IP from 82LEV/L	180 IA, 84HOW	754 V/GON.	-8	-33	75GOO	488-23-3
СH <sub>3</sub> СH <sub>3</sub> СH <sub>3</sub>	(8.07) IP from 84HOW/0	(176) GON.	(738)	-10	<b>~41</b>	75GOO	527-53-7
H <sub>3</sub> C CH <sub>3</sub>	8.04±0.01 See also: 82CAB/0	174 COW, 84HC	731 DW/GON.	-11	<b>~45</b>	75GOO	95-93-2
	(8.7) IP from 81BIS/GI	(248) .E.	(1036)	47	197	*EST	77614-69-8
C\$	(≤8.48)	(≤259)	(≤1085)	64	267	•EST	53143-76-3
C <sub>10</sub> H <sub>14</sub> BeO <sub>4</sub> +  H <sub>3</sub> C  O  Be O  CH <sub>3</sub> CH <sub>3</sub>	(8.1) IP is onset of phot		(–376) and.	-277±1	-1158±4	80TEL/RAB	10210-64-7
C <sub>10</sub> H <sub>14</sub> C <sub>0</sub> O <sub>4</sub> +  H <sub>3</sub> C  O  CH <sub>3</sub> CH <sub>3</sub>	7.6 IP is onset of phot		(-70) and (82LEV/LIA	–192±0.5 A, 83KIT/MO		83KAK/GIE	14024-48-7

Table 1. Positive Ion Table - Continued

	Table 1	1. Positive	Ion Table -	Continu	1ed		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ion) kcal/mol		Δ <sub>f</sub> H(Net		Neutral reference	CAS registry number
$\begin{array}{c c} \hline C_{10}H_{14}CuO_4^+ \\ \hline \\ H_3C \\ \hline \\ O \\ Cu \\ O \\ CH_3 \\ CH_3 \\ CH_3 \\ \end{array}$	(7.2) IP is onset of phot			161±0.5	-675±2	83KAK/GIE	13395-16-9
C <sub>10</sub> H <sub>14</sub> Fe <sup>+</sup> $\longrightarrow$	(6.6) IP is onset of pho	-	(803) nd (84GLE/BOI	40 H).	166	*EST	74910-62-6
C <sub>10</sub> H <sub>14</sub> FeO <sub>4</sub> +  H <sub>3</sub> C  O  Fe  CH <sub>3</sub> CH <sub>3</sub>	(7.50±0.04)	(-25) (	–105)	-198±0.5	-829±2	83KAK/GIE	14024-17-0
C <sub>10</sub> H <sub>14</sub> MnO <sub>4</sub> +  H <sub>3</sub> C O O O CH <sub>3</sub> CH <sub>3</sub>	(8.34±0.05)	(-37) (	<b>−154</b> )	−229±1	-959±4	83KAK/GIE	14024-58-9
C <sub>10</sub> H <sub>14</sub> N <sup>+</sup>	From proton affir 940. kJ/mol.		(716) ylpyrrolidine (R	N 4096-21-	3). PA = 224.7 k	cal/mol,	
C <sub>10</sub> H <sub>14</sub> N <sub>2</sub> +	(≤7.1) IP from 82CRI/LI	• •	i≤965)	67	280	*EST	82027-08-5
C <sub>10</sub> H <sub>14</sub> NiO <sub>4</sub> +  H <sub>3</sub> C  O  O  CH <sub>3</sub> CH <sub>3</sub>	(7.1) IP is onset of pho	•	(–130) nd. See also: 83k	–195±0.5 (IT/MOR.	-815±2	83KAK/GIE	3264-82-2

Table 1. Positive Ion Table - Continued

			C ION TABLE	Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> <i>H</i> (Io kcal/mol		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>14</sub> O +							
CICH3)3	(7.9) IP is onset of pho	(138) toelectron ba	(576) and (85BAI/MIS	-44 52). See also	-186 b: 83CET/LAP.	*EST	88-18-6
HO C(CH3)3	(≤8.40) IP from 83CET/L		(≤608)	<b>~</b> 48	-202	•EST	585-34-2
HO C(CH3)3	(7.8) IP is onset of phot	(132) coelectron ba	(551) and (85BAI/MIS	−48 ). See also:	-202 83CET/LAP.	*EST	98-54-4
	8.62 IP is onset of phot	(144) oelectron ba	(601) ind.	-55±1	-231±5	78ARO/STE	700-58-3
C <sub>10</sub> H <sub>14</sub> OS <sup>+</sup>		<del> </del>					
© S—CICH <sub>3</sub> 1 <sub>3</sub>	(≤8.50) IP from 81MOH/J		(≤717)	-25	-103	*EST	4170-71-2
C <sub>10</sub> H <sub>14</sub> O <sub>2</sub> +		<del></del>					
CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> O	(9.11) IP is onset of photo		(497) nd (80FRO/WE	-91 S).	-382	*EST	31211-08-2
C <sub>10</sub> H <sub>14</sub> O <sub>2</sub> S +			7 W That /				
	(9.15) IP is onset of photo		(690) nd (84AIT/GOS	-46 ).	-192	*EST	
© C(CH3)3	(≤9.7) IP from 81MOH/JI		(607)	<b>-7</b> 8	-328	*EST	4170-72-3

Table 1. Positive Ion Table - Continued

	Table .	I. Positiv	ve Ion Table -	Contin	uea		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol	utrai) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>14</sub> O <sub>2</sub> S <sup>+</sup>	(9.2) IP is onset of phot	(166) toelectron t	(696) pand (84AIT/GOS	-46 S).	-192	•EST	
C <sub>10</sub> H <sub>14</sub> O <sub>4</sub> Zn +  H <sub>3</sub> C  O  CH <sub>3</sub> CH <sub>3</sub>	7.8 IP is onset of phot	(-26) toelectron t	(–107) pand (83KIT/MOI	-206±2 R, 82LEV/L	-860±10 .IA).	83KAK/GIE	14024-63-6
C <sub>10</sub> H <sub>14</sub> S+	8.39±0.05	(197)	(825)	4	15	*EST	3019-19-0
H <sub>3</sub> C —SCH(CH <sub>3</sub> ) <sub>2</sub>	(≤8.38)	(≤198)	(≤828)	5	19	*EST	14905-80-7
н <sub>3</sub> сСН(СН <sub>3</sub> ) <sub>2</sub>	(8.5) IP is onset of pho	(201) toelectron l	(839) pand.	5	19	*EST	14905-81-8
C <sub>10</sub> H <sub>14</sub> Se <sup>+</sup>	(7.2) IP is onset of pho	(184) toelectron l	(772) band (81BAK/AR	18 M).	77	*EST	78805-16-0
C <sub>10</sub> H <sub>15</sub> +	From proton affin 804. kJ/mol.	170 nity of n-C <sub>4</sub>	713 H <sub>9</sub> C <sub>6</sub> H <sub>5</sub> (RN 104	-51-8). PA	= 192.1 kcal/mol	,	
(C(CH3)3)H+	From proton affir 807. kJ/mol.	167 hity of tert-	700 C <sub>4</sub> H <sub>9</sub> C <sub>6</sub> H <sub>5</sub> (RN 9	8-06-6). P <i>F</i>	A = 193.0 kcal/mo	ol,	

Table 1. Positive Ion Table - Continued

			t Ion Table	Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>15</sub> +							
	(6.21) Δ <sub>f</sub> H(Ion) from ch (85SHA/SHA, 861 -180 kJ/mol.	(159) Iloride and I KRU/BEA)	(665) nydride transfer ; Δ <sub>f</sub> Η (Adaman	16 equilibrium tyl chloride)	66 constant determi estimated as -43	86KRU/BEA nations kcal/mol,	19740-18-2
	(6.73) IP from 86KRU/B	(168) BEA.	(704)	13	54	86KRU/BEA	
C <sub>10</sub> H <sub>15</sub> Br <sup>+</sup>				**************************************		1400	
Br	9.30±0.06 IP from 84ABE/D	(183) EL, 82LEV	(766) //LIA.	-31	-131	*EST	768-90-1
Br	(9.31±0.05)	(185)	(772)	-30	-126	*EST	7314-85-4
C <sub>10</sub> H <sub>15</sub> Br <sub>3</sub> Ti <sup>+</sup> Br  CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(8.0) IP is onset of photo	(30) pelectron ba	(126) and (84TER/LO	-154 U).	-646	*EST	33151-84-7
C <sub>10</sub> H <sub>15</sub> Cl <sup>+</sup> Cl  CH <sub>2</sub> CH <sub>3</sub> CH <sub>3</sub>	(≤9.11) IP from 81NES/BA		(≤809)	-17	<b>-</b> 70	*EST	4017-64-5
	(9.30)	(171)	(717)	-43	-180	*EST	935-56-8
			·····	<del></del>			

Table 1. Positive Ion Table - Continued

	Table	1. I USILI	ve ion table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>15</sub> CIN <sup>+</sup>							
(CI NIC2H5)2 H	From proton affii 944. kJ/mol.	142 nity of 4-CIO	594 C <sub>6</sub> H <sub>4</sub> N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (	(RN 2873-89	-4). PA = 225.6	kcal/mol,	
C <sub>10</sub> H <sub>15</sub> Cl <sub>3</sub> Ti +							
H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(8.1) IP is onset of pho	(7) otoelectron t	(30) band (84TER/LC	–179 DU).	<b>-751</b>	*EST	12129-06-5
C <sub>10</sub> H <sub>15</sub> F <sup>+</sup>				•			
F	(9.46)	(141)	(592)	<i>-π</i>	-321	*EST	16668-83-0
C <sub>10</sub> H <sub>15</sub> I +							
i i	(8.6) IP is onset of pho	(182) otoelectron t	(760) band (84ABE/DI	<b>−17</b> 3L).	-70	*EST	768-93-4
C <sub>10</sub> H <sub>15</sub> N <sup>+</sup>						,	
H <sub>2</sub> N — CICH <sub>3</sub> ) <sub>3</sub>	(7.35±0.02) IP from 85ORL/N	(165) MIS. See als	(691) :o: 85BAI/MIS2.	-4.5	-19	85ORL/MIS	769-92-6
C <sub>2</sub> H <sub>5</sub>	(≤7.77) IP from 82ROZ/I	(≤176) HOU2.	(≤736)	-3	-14	*EST	579-66-8
OTT NHCH3	(≤8.60±0.20)	(≤199)	(≤832)	0.5	2	*EST	7632-10-2
H <sub>3</sub> C CH <sub>3</sub>	(7.22)	(171)	(717)	5	20	*EST	13021-14-2

Table 1. Positive Ion Table - Continued

	Tubic .	L. I USILIY	e ion table -	Contin	ucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>10</sub> H <sub>15</sub> N <sup>+</sup>							
NICH3½	(7.70±0.05) See also: 81LOG/	(193) ГАК.	(807)	15	64	*EST	1126-71-2
NIC <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	6.98±0.02 IP from charge tra IP (C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(171) nsfer equili 2=7.12eV)	(714) brium constant d (84MAU/NEL, 8	9.5 eterminatio SLIA/JAC)	40 ns; reference stan	69BEN/CRU dard:	91-66-7
H <sub>3</sub> C CH <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(7.61) See also: 81LOG/I	(187) TAK.	(784)	12	49	*EST	4052-88-4
H <sub>3</sub> CNCH <sub>3</sub> CH <sub>3</sub>	(≤7.79) IP from 82ROZ/H		(≤820)	16	68	*EST	769-53-9
H <sub>3</sub> C CH <sub>3</sub> ) <sub>2</sub>	(7.30±0.02) See also: 82ROZ/H	(190) IOU2.	(797)	22	93	*EST	769-06-2
H <sub>3</sub> C CH <sub>3</sub> ) <sub>2</sub>	(6.95) IP from charge tran IP (C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> ) <sub>2</sub>	sfer equilit		8 termination	35 as; reference stand	*EST dard:	4913-13-7
C <sub>10</sub> H <sub>15</sub> NO +	(≤8.16±0.06) (	(≤184) (	(≤768)	<b>-</b> 5	-19	*EST	23239-32-9
C <sub>10</sub> H <sub>15</sub> NO <sub>2</sub> +  H <sub>3</sub> CO  NH <sub>2</sub>	7.4 IP is onset of photo					*EST	120-20-7

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve ion Table	- Contin	nea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>15</sub> NO <sub>2</sub> +  CH <sub>3</sub> CH <sub>3</sub> H <sub>3</sub> C CC <sub>2</sub> H <sub>4</sub>	(≤7.71) IP from 81CAU/0 5	(≤74) GIA.	(≤311)	-103	-433	*EST	2199-46-4
H <sub>3</sub> C COOC <sub>2</sub> H <sub>5</sub>	(7.5) IP is onset of pho	(69) stoelectron t	(290) band (81CAU/GI	-103 A).	-433	*EST	55770-78-0
H <sub>5</sub> C <sub>2</sub> O C N	(8.0) IP is onset of pho	(114) stoelectron t	(479) band (81CAR/G <i>A</i>	–70 <sup>-</sup> AN).	-293	*EST	3693-69-4
C <sub>10</sub> H <sub>15</sub> NO <sub>3</sub> +	(8.5) IP is onset of pho	(53) stoelectron t	(220) band (81CAR/G <i>A</i>	–143 AN).	-600	•EST	37778-51-1
C <sub>10</sub> H <sub>15</sub> N <sub>2</sub> O <sub>5</sub> +	From proton affi	(-72) nity of thym	(-301) idine (RN 50-89-3	5). PA = (2	08) kcal/mol,	(870) kJ/mol.	
C <sub>10</sub> H <sub>15</sub> O <sub>2</sub> P+	(8.2) IP is onset of pho	(87) stoelectron l	(362) band (81ARS/ZV	103 E, 81ZVE/\	–429 /IL2).	•EST	1638-86-4
C <sub>10</sub> H <sub>16</sub> +  (H <sub>2</sub> C) <sub>3</sub> C=C CH <sub>2</sub> ) <sub>3</sub> C+C CH <sub>2</sub> ) <sub>3</sub> C+C CH <sub>2</sub> ) <sub>3</sub>	(≤8.68)	(≤194)	(≤813)	-6	-24	76JEN	1124-79-4
(H <sub>2</sub> C) <sub>3</sub> H (E) CH <sub>2</sub> C) <sub>3</sub> H (CH <sub>2</sub> C) <sub>3</sub>	(\$8.05)	(≤184)	(≤769)	-2	-8	76JEN	15840-81-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	ion) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C <sub>10</sub> H <sub>16</sub> +  CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(8.07)	(193)	(807)	7±0.5	28±2	77PED/RYL	80-56-8
СН <sub>3</sub> СН <sub>2</sub>	(≤8.86) IP from 81NES/B	(≤198) AI.	<b>(≤827)</b>	-7	-28	<i>77</i> KOZ/BYC	79-92-5
	(8.5) IP is onset of pho	(219) toelectron t	(915) pand (82SPA/GLI	23 3).	95	*EST	81969-73-5
	9.35±0.05	201.2	841.9	−14.4±1	-60.2±3	71BOY/SAN	6004-38-2
	9.24±0.06	181	759	-31.8±0.3	-132.7±1.3	75CLA/KNO	281-23-2
	(8.7) IP is onset of phot	(209) oelectron b	(875) and.	9	36	*EST	53764-10-6
	(≤9.17)	(≤211)	(≤882)	-0.7	-3	*EST	24518-94-3
$\Rightarrow$	(8.5) IP is onset of phot	(231) oelectron b	(967) and (82SPA/GLE	35 , 82LEV/Ll	147 (A).	*EST	24029-74-1

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C <sub>10</sub> H <sub>16</sub> N <sup>+</sup>									
(NC2H512)	From proton affin	148 ity of C <sub>6</sub> H <sub>5</sub>	617 N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (R)	191-66-7). P	A = 227.6 kcai/n	nol,			
H3C CH3)2	From proton affini 950. kJ/mol.	147 ity of 3,5-(C	615 CH <sub>3</sub> ) <sub>2</sub> C <sub>6</sub> H <sub>3</sub> N(0	CH <sub>3</sub> ) <sub>2</sub> (RN 4	913-13-7). PA =	227.0 kcal/mol,			
C <sub>10</sub> H <sub>16</sub> N <sub>2</sub> +				•	•				
N(CH <sub>3</sub> ) <sub>2</sub>	(7.1) IP is onset of photo	(200) oelectron b	(836) and (81NEL/G	36 RE).	151	*EST	704-01-8		
(CH <sub>3</sub> ) <sub>2</sub> N N(CH <sub>3</sub> ) <sub>2</sub>	6.20±0.05	164	686	21	88	83MET/ARA	100-22-1		
C10H16N6S+  N CH3  CH2SCH2CH2NHC  NHCH3	(7.7) IP is onset of photos	(249) pelectron b	(1042) and (80KLA/B	72 UT).	300	*EST	51481-61-9		
C <sub>10</sub> H <sub>16</sub> O +		·							
CH <sub>3</sub> CH <sub>3</sub>	(8.5) IP is onset of photo	(125) Delectron b	(523) and (80FRO/W	-71 ES).	-297	*EST	1195-79-5		
H <sub>3</sub> C CH <sub>3</sub>	(8.76±0.03)	(138)	(578)	-64±0.7	−267±3	77STE	76-22-2		
ОН	(9.09±0.05)	(136)	(566)	−74±0.7	-311±3	78ARO/STE	768-95-6		

Table 1. Positive Ion Table - Continued

			ve ion table	- Contin	ucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
С <sub>10</sub> Н <sub>16</sub> О +	(9.09±0.07)	(139)	(578)	-71±1	−299±5	78ARO/STE	700-57-2
C <sub>10</sub> H <sub>16</sub> OS +	(8.2) IP is onset of pho	(147) toelectron t	(613) pand (82PFI/GE	–43 R).	-178	*EST	52735-49-6
C <sub>10</sub> H <sub>16</sub> OSi +	(≤8.06) IP from 83HOU/F	(≤136) RON.	(≤571)	<b>-4</b> 9	-207	*EST	68364-22-7
C <sub>10</sub> H <sub>16</sub> O <sub>2</sub> +	(≤8.87) IP from 82PFI/GE	(≤117) ER.	(≤489)	-88	-367	*EST	6267-39-6
C <sub>10</sub> H <sub>16</sub> O <sub>2</sub> S +	≤9.75 IP from 83JIA/MC	(≤185) OH.	(≤773)	-40	-168	*EST	
C <sub>10</sub> H <sub>16</sub> O <sub>2</sub> S <sub>3</sub> +	≤8.55 IP from 83JIA/MC		(≤637)	-45	<b>-188</b>	*EST	
С <sub>10</sub> H <sub>16</sub> S +	≤8.40 IP from 83JIA/MC		(≤992)	43	182	•EST	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>10</sub> H <sub>16</sub> S+	(8.22) IP from 80SAR/W	(187) OR.	(782)	-3	-11	*EST	77471-74-0			
H <sub>2</sub> C S	(8.26) IP from 80SAR/W	(185) 'OR.	(773)	<b>-6</b>	-24	*EST	77471-73-9			
CH3 CH3 S	(8.13) IP from 80FRO/W	(167) /ES. Sec als	(697) so: 82LEV/LIA.	-21	-87	*EST	875-06-9			
SH	(8.6) IP is onset of phot	(158) coelectron b	(663) pand.	<b>-40</b>	-167	*EST	34301-54-7			
C <sub>10</sub> H <sub>16</sub> SSI +	(≤7.81±0.05)	(≤121)	(≤506)	59	-248	*EST	17873-08-4			
C <sub>10</sub> H <sub>16</sub> S <sub>3</sub> +	7.8 IP is onset of phot	(219) oelectron b	(915) pand (83JIA/MO	39 H).	162	*EST				
C <sub>10</sub> H <sub>16</sub> Si <sup>+</sup> —CH <sub>2</sub> S <sub>1</sub> (CH <sub>3</sub> ) <sub>3</sub>	8.35	(164)	(685)	-29	-121	*EST	770-09-2			

Table 1. Positive Ion Table - Continued

			e ion indic	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>16</sub> Sn +							
CH2-Sn(CH3)3	8.08±0.05	206	863	20±1	83±6	77PED/RYL	4314-94-7
C <sub>10</sub> H <sub>17</sub> +							
H <sub>3</sub> C CH <sub>3</sub>	From proton affin PA = (216.1) kcal			ylenecycloh	exene (RN 16609-	28-2).	
C <sub>10</sub> H <sub>17</sub> N <sup>+</sup>							***************************************
	7.10 See also: 81MUL/	(165) PRE2.	(689)	1	4	*EST	1125-99-1
	(7.0) IP is onset of photo	(138) pelectron b	(580) and.	-23±1	-95±4	*EST	1614-92-2
CH3 CH3 NH2 CH2	(≤8.67) IP from 81NES/B&		(≤828)	-2	<b>-9</b>	•EST	13487-72-4
C <sub>10</sub> H <sub>17</sub> NO +			······				
H <sub>3</sub> C N(CH <sub>3</sub> )2	(≤7.88) IP from 82PFI/GE		(≤596)	-39	164	*EST	31039-88-0
C <sub>10</sub> H <sub>17</sub> NO <sub>2</sub> +		<u>.</u>					
H <sub>5</sub> C <sub>2</sub> O C N	(7.9) IP is onset of photo	(63) pelectron ba	(265) and (81CAR/GA	–119 N).	-497	*EST	39926-11-9
		·	·			<del></del>	<del></del>

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Table 1. Positive Ion Table - Continued

ON Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>17</sub> N <sub>2</sub> +							
NICH312 HT	From proton affin 984. kJ/mol.	167 ity of 1,2-(N	697 N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>2</sub> C <sub>6</sub>	H <sub>4</sub> (RN 704-01	-8). PA = 235	.2 kcal/mol,	
10 <sup>H</sup> 18 <sup>+</sup> 1-C <sub>10</sub> H <sub>18</sub>	(9.91±0.02)	(239)	(998)	10±.7	42±3	79ROG/DAG	764-93-2
2-C <sub>10</sub> H <sub>18</sub>	(9.30±0.02)	(220)	(921)	6±0.7	24±3	79ROG/DAG	2384-70-5
3-C <sub>10</sub> H <sub>18</sub>	9.19±0.01	217	909	5±0.7	22±3	79ROG/DAG	2384-85-2
4-C <sub>10</sub> H <sub>18</sub>	(9.17±0.02)	(216)	(905)	5±0.7	20±3	79ROG/DAG	2384-86-3
5-C <sub>10</sub> H <sub>18</sub>	9.13±0.03	(216)	(905)	6	24	*EST	1942-46-7
(tert-C <sub>4</sub> H <sub>9</sub> )C≡C(tert-C <sub>4</sub> H <sub>9</sub> )	(9.05±0.01) See also: 85ORL/I	(206) 3OG.	(861)	-3	-13	*est	17530-24-4
(CH <sub>2</sub> ) <sub>8</sub> (E)	(8.80)	(199)	(832)	-4	-17	78GRE/LIE	2198-20-1
(CH <sub>2</sub> )8 (Z)	(8.80)	(196)	(820)	-7	-29	78GRE/LIE	935-31-9
₩ ₩	9.24 From charge trans Photoionization or 9.26 eV (77BIE/BI	nset, 9.32 eV		determinations	-	•	493-02-7
$\bigcirc$	9.26 From charge trans onset, 9.32 eV (80)	•		determination (		77PED/RYL Photoionization	493-01-6

Table 1. Positive Ion Table - Continued

	Table :	l. Positive	Ion Table -	Contin	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>18</sub> NO +							
( NH <sub>2</sub>	From proton affin 937. kJ/mol.		(396) mino-2-twistano	i. PA = 22	4.0 kcal/mol,		
( NH <sub>2</sub> ) H	From proton affin 927. kJ/mol.		(398) i-amino-2-twista	nol (isomer	1). PA = 221.5 k	ccal/mol,	
HO NH <sub>2</sub>	From proton affin 920. kJ/mol.		(405) -amino-2-twistar	nol (isomer	2). PA = 220.0 l	ccal/mol,	
C <sub>10</sub> H <sub>18</sub> OSi <sup>+</sup>							
OS:(CH3)3	(≤8.09) IP from 83HOU/F		(≤424)	-85	-357	*EST	57722-40-4
C <sub>10</sub> H <sub>18</sub> O <sub>2</sub> S <sub>3</sub> +				· · · · · · · · · · · · · · · · · · ·			
H <sub>3</sub> C CH <sub>3</sub> O S I S  H <sub>3</sub> C CH <sub>3</sub>	(≤9.55) IP from 83JIA/M0		(≤552)	-88	-369	*EST	
C <sub>10</sub> H <sub>18</sub> O <sub>4</sub> Si +						, , ,	
0 C <sub>2</sub> H <sub>5</sub> Si - 0 C <sub>2</sub> H <sub>5</sub> 0 C <sub>2</sub> H <sub>5</sub>	(8.0) IP is onset of phot		(-110) nd (83ZYK/ER(	<b>-211</b> C).	-882	*EST	55811-52-4
C <sub>10</sub> H <sub>18</sub> S +  H <sub>3</sub> C CH <sub>3</sub> S	≤8.35 IP from 83JIA/MO		(≤787)	-5	-19	*EST	

Table 1. Positive Ion Table - Continued

	Table :	I. Positi	ve Ion Table	- Contin	ued		
ION I	onization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>10</sub> H <sub>18</sub> S <sub>2</sub> + (H <sub>3</sub> C) <sub>3</sub> C   S (H <sub>3</sub> C) <sub>3</sub> C	7.65 IP is onset of phot	(204) coelectron l	(853) band (83JIA/MO	27 H).	115	*EST	
C <sub>10</sub> H <sub>18</sub> S <sub>3</sub> +	7.8 IP is onset of phot	172 coelectron l	719 pand (83JIA/MO	-8 H).	-34	*EST	
C <sub>10</sub> H <sub>19</sub> N <sup>+</sup>	(≤7.61) IP from 81MUL/P	(≤161) PRE2.	(≤673)	-14	-61	*EST	21086-43-1
$\langle \rangle$	(6.94±0.09) IP is onset of phot	(166) oelectron t	(695) pand.	6	25	*EST	31023-92-4
C <sub>10</sub> H <sub>20</sub> + 1-C <sub>10</sub> H <sub>20</sub>	9.42±0.01 See also: 81HOL/I	188 FIN.	786	-29.5±0.5	-123.3±2	77PED/RYL	872-05-9
$(Z)$ - $C_{10}H_{20}$	8.90±0.01	(174)	(727)	-32	-132	*EST	20348-51-0
(E)-2-C <sub>10</sub> H <sub>20</sub>	8.90±0.01	(173)	(724)	-32	-135	*EST	20063-97-2
(Z)-3-C <sub>10</sub> H <sub>20</sub>	8.83±0.01	(172)	(721)	-31	-131	*EST	19398-86-8
(E)-3-C <sub>10</sub> H <sub>20</sub>	8.83±0.01	(171)	(717)	-32	-135	*EST	19150-21-1
(Z)-4-C <sub>10</sub> H <sub>20</sub>	8.78±0.01	(171)	(716)	-31	-131	*EST	19398-88-0
(E)-4-C <sub>10</sub> H <sub>20</sub>	8.78±0.01	(170)	(712)	-32	-135	*EST	19398-89-1
(Z)-5-C <sub>10</sub> H <sub>20</sub>	8.77±0.01	(171)	(715)	-31	-131	*EST	7433-78-5
(E)-5-C <sub>10</sub> H <sub>20</sub>	8.76±0.01	(170)	(710)	-32	-135	*EST	7433-56-9
$(\text{tert-C}_4\text{H}_9)_2\text{C} = \text{CH}_2$	(8.79±0.01)	(164)	(688)	-38	-161	*EST	5857-68-1
$n-C_5H_{11}C(CH_3) = C(CH_3)_2$	(8.13±0.01)	(151)	(633)	-36	-152	*EST	19781-18-1

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Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
$C_{10}H_{20}^+$ $C_4H_9C(C_2H_5) = C(CH_3)$	) <sub>2</sub> (8.10±0.01)	(151)	(630)	-36	-151	*EST	19780-61-1
(tert-C <sub>4</sub> H <sub>9</sub> )CH <sub>2</sub> C(CH <sub>3</sub> )		(146)	(610)	41	-172	*EST	33175-59-6
$(Z)-(t-C_4H_9)CH=CH(t-C_4H_9)CH(t-C_4H_9)CH=CH(t-C_4H_9)CH(t-C_5H_9)CH$	-C <sub>4</sub> H <sub>9</sub> ) 8.69±0.01	(171)	(717)	-29±0.7	-121±3	*EST	692-47-7
$(E)-(t-C_4H_9)CH=CH(t-C_4H_9)CH(t-C_5H_9)CH(t-C_5$	·C <sub>4</sub> H <sub>9</sub> ) 8.74±0.01	162	677	-40±0.7	-166±3	79FUC/PEA	692-48-8
	(9.5) IP is onset of pho	(182) toelectron	(762) band (77BIE/B		-154.3±1.5	77PED/RYL	293-96-9
(CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	9.41 From charge transstandard, fluorobo				(82SIE/MAU)		1678-93-9
CH <sub>2</sub> H <sub>5</sub>	9.23 From charge trans standard, fluorobe						7058-01-7
CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	(9.54±0.03)	(171)	(716)	<b>-</b> 49	-204	•EST	1678-98-4
CH(CH <sub>3</sub> ) <sub>2</sub>	9.32 From charge trans reference standard	_		−55±0.7 determinations	-231±3 (82SIE/MAU)	77PED/RYL ;	99-82-1
(CH <sub>2</sub> ) <sub>4</sub> CH <sub>3</sub>	(9.91±0.05)	(184)	(767)	<b>-</b> 45	-189	71ASTM	3741-00-2

Table 1. Positive Ion Table - Continued

···········		. 1 03111	ve ion labr	- Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>20</sub> N <sup>+</sup>							
( H+	From proton affin PA = 230.1 kcal/t			ndecane (RN 3	1023-92-4).		
C <sub>10</sub> H <sub>20</sub> NO +		<del></del>					
(NH <sub>2</sub> )	From proton affir 929. kJ/mol.	67 ity of 4-am	280 inodecahydro-	3-naphthaleno	. PA = 222.1	kcal/mol,	
C <sub>10</sub> H <sub>20</sub> N <sub>2</sub> +							
NN	(7.60) Reported values of usually significant change associated	ly higher th	an the adiabat	ic value becaus			60678-75-3
\_\NN\_	(7.89) See also: 84NEL.	(189)	(791)	7	30	*EST	6130-94-5
C <sub>10</sub> H <sub>20</sub> O <sub>5</sub> +							<u></u>
	(8.9) IP is onset of pho	(14) toelectron	(60) band. See also	–191±0.5 83BAK/ARM		82BYS/MAN	33100-27-5
C <sub>10</sub> H <sub>20</sub> SSi <sub>2</sub> +							
:H <sub>3</sub> ) <sub>3</sub> S,	(7.8) IP is onset of pho	(126) toelectron	(526) band (83VES/	-54 HAR).	-227	•EST	17906-71-7
C <sub>10</sub> H <sub>21</sub> N <sup>+</sup>							
H <sub>3</sub> C C <sub>3</sub> H	(7.23) IP from 82ROZ/F	(127) IOU.	(530)	-40	-167	*EST	79-55-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>21</sub> O <sub>5</sub> +	From proton affii (RN 33100-27-5).				ane (15-Crow	n-5)	
C <sub>10</sub> H <sub>22</sub> + n-C <sub>10</sub> H <sub>22</sub>	9.65 From charge tran Reference standa	-		-46.1±0.2	-249.5±0.9 -192.7±0.9 ).	77PED/RYL	124-18-5
C <sub>10</sub> H <sub>22</sub> N <sub>2</sub> O <sub>3</sub> +							
NH O	(≤8.4) IP from 83BAK/A	(≤88) ARM.	(≤369)	-105	-441	*EST	31249-95-3
C <sub>10</sub> H <sub>23</sub> N <sup>+</sup> n-C <sub>10</sub> H <sub>21</sub> NH <sub>2</sub>	(8.63±0.05) See also: 79AUE/	(148) BOW.	(619)	-51	-214	*EST	2016-57-1
C <sub>10</sub> H <sub>23</sub> O <sup>+</sup> (n-C <sub>5</sub> H <sub>11</sub> ) <sub>2</sub> OH	From proton affin PA = 203.5 kcal/r	_		693-65 <b>-2)</b> (86S <sub>4</sub>	4N/BAL, 85H	IOU/ROL).	
C <sub>10</sub> H <sub>24</sub> N <sup>+</sup> n-C <sub>10</sub> H <sub>21</sub> NH <sub>3</sub>	From proton affin	(94) ity of n-C <sub>10</sub>	(393) H <sub>21</sub> NH <sub>2</sub> . PA	A = (220.7) kca	I/moi, (923.) k	J/mol.	
C <sub>10</sub> H <sub>24</sub> N <sub>2</sub> + (n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NN(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(≤7.87) Reported values o usually significant geometry change a	y higher tha	ın the adiabat	ic value because	of the large	*EST nents are	52598-09-1
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NN(CH <sub>3</sub> ) <sub>2</sub>	(≤7.96) Reported values o usually significantl geometry change a	y higher tha	ın the adiabat	ic value because	of the large	*EST ments are	60678-67-3

Table 1. Positive Ion Table - Continued

			e ion lable -	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>10</sub> H <sub>24</sub> N <sub>4</sub> +	(7.7) IP is onset of pho	(182) toelectron b	(761) and (83BAK/AR	4.3±0.8 M).	18.0±3.3	83CLA/COR	295-37-4
C <sub>10</sub> H <sub>24</sub> O <sub>2</sub> Si <sub>3</sub> +	(≤9.36) IP from 81KHV/2	•	(≤−293)	-286	-1196	*EST	76795-95-4
C <sub>10</sub> H <sub>25</sub> N <sub>2</sub> + (CH <sub>3</sub> ) <sub>2</sub> NH(CH <sub>2</sub> ) <sub>6</sub> N(CH <sub>3</sub> )	)2 From proton affir 1023. kJ/mol.	106 hity of (CH <sub>3</sub>	444 ) <sub>2</sub> N(CH <sub>2</sub> ) <sub>6</sub> N(CH	I <sub>3</sub> ) <sub>2</sub> (RN 11	1-18-2). PA = 2	45. kcal/mol,	
C <sub>10</sub> H <sub>30</sub> N <sub>5</sub> Ta <sup>+</sup> Ta(N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>5</sub>	(6.5) IP is onset of pho	(93) toelectron b	(390) pand.	-57±4	−237±15	82TN270	
C <sub>10</sub> H <sub>30</sub> O <sub>3</sub> Si <sub>4</sub> + [(CH <sub>3</sub> ) <sub>3</sub> SiOSi(CH <sub>3</sub> ) <sub>2</sub> ] <sub>2</sub> O	(≤10.24) IP from 82ERM/I	(≤-226) KIR.	(≤-947)	-462±5	-1935±23	77PED/RYL	141-62-8
C <sub>10</sub> H <sub>30</sub> Si <sub>4</sub> + n-Si <sub>4</sub> (CH <sub>3</sub> ) <sub>10</sub>	7.29±0.01	32	135	-136±6	-568±24	77PED/RYL	865-76-9
C <sub>10</sub> MnO <sub>10</sub> Re + MnRe(CO) <sub>10</sub>	8.22±0.01	(-184)	(-769)	-373	-1562	*EST	14693-30-2
C <sub>10</sub> Mn <sub>2</sub> O <sub>10</sub> + Mn <sub>2</sub> (CO) <sub>10</sub>	(7.7) IP is onset of pho	(-201) stoelectron t	(-842) pand. See also: 81	-379±1 MIC/SVE.	−1585±5	82CON/ZAF	10170-69-1
C <sub>10</sub> O <sub>10</sub> Re <sub>2</sub> + Re <sub>2</sub> (CO) <sub>10</sub>	(7.8) IP is onset of pho	(-193) stoelectron t	(-806) pand. See also: 81	-373±3 MIC/SVE.	-1559±11	83ALT/CON	14285-68-8
C <sub>11</sub> H <sub>5</sub> MnO <sub>5</sub> +	(8.22±0.05)	(49)	(203)	-141±0.2	-590±1	82CON/ZAF	13985-77-8

Table 1. Positive Ion Table - Continued

	Table .	2. 2 03161	ve ion table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	∆ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
С <sub>11</sub> H <sub>7</sub> BrO <sub>2</sub> +	(9.25) IP is onset of phot	(182) toelectron l	(760) band (80RED/	-31 FRE).	-132	*EST	3129-39-3
C <sub>11</sub> H <sub>7</sub> CIF <sub>2</sub> O <sub>2</sub> S +	(≤8.90) IP from 84AND/C	(≤35) CER.	(≤146)	-170	-713	*EST	
C <sub>11</sub> H <sub>7</sub> ClO <sub>2</sub> <sup>+</sup>	(9.4) IP is onset of phot	(180) oelectron t	(754) pand (80RED/	-37 FRE).	-153	*EST	17015-99-5
C <sub>11</sub> H <sub>7</sub> N <sup>+</sup>	(8.59) IP from 83KLA/K	(244) OV.	(1021)	46	192	*EST	86-53-3
OO CN	(8.56) IP is onset of phot	(243) oelectron b	(1016) pand (83KLA/I	45 (OV).	190	*EST	613-46-7
C <sub>11</sub> H <sub>8</sub> +	(8.03) IP from 80SCH/S0	(289) CH.	(1210)	104	435	73ВІL/СНО	286-85-1
C <sub>11</sub> H <sub>8</sub> Br <sub>2</sub> <sup>+</sup>	(7.85) IP is onset of phot	(252) oelectron b	(1053) pand (84AND/6	71 CER).	296	*EST	15825-93-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Iα kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>11</sub> H <sub>8</sub> CrO <sub>5</sub> +							
ос <u>с</u> соосн <sub>з</sub>	(7.02±0.1)	(4)	(18)	-157	-659	84ALT/CON	12125-87-0
C <sub>11</sub> H <sub>8</sub> F <sub>2</sub> +							
FF	(8.19±0.03) IP from 84AND/0	(149) CER.	(625)	<b>-39</b>	-165	•EST	61997-36-2
C <sub>11</sub> H <sub>8</sub> FeO <sub>3</sub> +			<u> </u>				
oc co	(7.3) IP is onset of pho	(132) toelectron b	(554) and (82LEV/LL	−36±3 A, 80BOH/G	−150±13 LE).	82PIL/SKI	12093-05-9
C <sub>11</sub> H <sub>8</sub> M <sub>0</sub> O <sub>4</sub> +							
oc Mo co	(7.0) IP is onset of pho	(81) toelectron b	(339) and.	-80±3	-336±11	82PIL/SKI	12146-37-1
C <sub>11</sub> H <sub>8</sub> O <sup>+</sup>							
0-0	(8.3) IP is onset of pho	(210) toelectron b	(879) and.	19	78	*EST	4443-91-8
сно	(8.33) IP from 83KLA/K	(199) COV.	(834)	7	30	•EST	66-77-3
	(8.0) IP is onset of phot	(218) toelectron b	(914) and (84AND/CE	34 ER).	142	*EST	36628-80-5

Table 1. Positive Ion Table - Continued

			e ion table -	Contin			
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>11</sub> H <sub>8</sub> O <sub>2</sub> +	(9.3) IP is onset of photon	(184) toelectron b	(770) and (80RED/FR	−30 E).	-127	*EST	58-27-5
Соон	(8.29) IP from 83KLA/K	(138) COV.	(577)	−53.3±0.2	-223.1±0.9	77PED/RYL	86-55-5
Соон	(8.26) IP from 83KLA/K	(135) OV.	(564)	−55.6±0.4	-232.5±1.6	77PED/RYL	93-09-4
C <sub>11</sub> H <sub>8</sub> S <sub>2</sub> +	(7.3) IP is onset of phot	(237) coelectron b	(991) and (81BOC/BR	69 A).	287	*EST	204-14-8
C <sub>11</sub> H <sub>9</sub> +	(7.35±0.1) Appearance poten lead to value for Δ					82MCM/GOL n)	7419-60-5
C <sub>11</sub> H <sub>9</sub> F <sup>+</sup>	(8.10±0.03) IP is onset of phot	(203) oelectron ba	(848) and (84AND/CE	16 R).	66	*EST	72791-63-0
С <sub>11</sub> H <sub>9</sub> F <sub>3</sub> O +	(9.0±0.05) IP from 79SCH/G	(39) RU, 80GRL	(164) J/SCH, 81SCH/G	-168 RO.	-704	79SCH/GRU	76293-37-3
F <sub>3</sub> C CH <sub>3</sub>	(9.1±0.05) IP from 81SCH/G		(175)	~168	-703	*EST	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Id	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>11</sub> H <sub>9</sub> F <sub>3</sub> O +							
F3C CH3	(9.1±0.05) IP from 81SCH/0	(42) GRO.	(175)	-168	-703	*EST	
C <sub>11</sub> H <sub>10</sub> +							
CH <sub>3</sub>	7.85 IP from 82LEV/I	208 LIA, 83KLA	870 /KOV.	27±0.5	113±2	74SAB/CHA	90-12-0
CH3	(≤7.26±0.03)	(≤227)	(≤953)	60	253	*EST	769-31-3
CH3	(≤7.33±0.03)	(≤229)	(≤960)	60	253	*EST	17647-77-7
©© CH3	(≤7.30±0.03)	(≤227)	(≤950)	59	246	•EST	1654-55-3
©О́−сн <sub>3</sub>	(≤7.34±0.03)	(≤228)	<b>(≤954)</b>	59	246	•EST	1654-52-0
©О Сн3	(7.8) IP is onset of pho	(206) otoelectron b	(864) pand (82LEV/LIA	27±0.5 a, 83KLA/K	111±2 OV).	74SAB/CHA	91-57-6
	(8.1) IP is onset of pho	(253) otoelectron t	(1057) pand.	66	276	*EST	4453-90-1

Table 1. Positive Ion Table - Continued

	Table	L. Positive	ion Table -	Contin	uea		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion kcal/mol		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>11</sub> H <sub>10</sub> +							
CH <sub>2</sub>	(7.7) IP is onset of photo		(1058) nd (84AND/CE	75±1 R).	315±6	77PED/RYL	2443-46-1
C <sub>11</sub> H <sub>10</sub> CrO <sub>3</sub> +							
CH <sub>3</sub> Cr(CO)	(6.70±0.1) See also: 82GUI/F		(224)	-101	-422	*EST	12129-29-2
C <sub>11</sub> H <sub>10</sub> O +							
OCH <sub>3</sub>	7.70 IP from 83KLA/K		(742)	-0.2	-1	*EST	2216-69-5
OO OCH3	(7.44) IP is onset of phot		(717) nd (83KLA/KOV	-0.2 /).	-1	*EST	93-04-9
C <sub>11</sub> H <sub>10</sub> OS +							
SCH3 CH3	(≤8.40) IP from 84GLE/B		≤840)	7	30	*EST	
C <sub>11</sub> H <sub>10</sub> O <sub>2</sub> +					., .,		
CH3	(8.5) IP is onset of photo			-51	-213	*EST	20651-88-1
	≤9.1 IP from 84MAR/K		814	-15	-64	64COO/CRU	
				<del>^</del>			

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>11</sub> H <sub>11</sub> +										
CH3 H+	From proton affir 840. kJ/mol.	192 aity of 1-met	803 hylnaphthalene (	RN 90-12-0	)). PA = 200.7 kc	al/mol,				
CH3	From proton affin 837. kJ/mol.	192 lity of 2-met	804 hylnaphthalene (	RN 91-57-6	i). PA = 200.0 kc	al/mol,				
C <sub>11</sub> H <sub>11</sub> CrNO <sub>3</sub> +				•						
ос со _ со со со со со	(6.9)	(63)	(262)	−96±3	-404±13	84ALT/CON	12109-10-3			
C <sub>11</sub> H <sub>11</sub> NO <sup>+</sup>			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	***************************************		<del></del>			
CH <sub>3</sub>	(7.55) IP from 84GLE/B	(182) IS.	(763)	8	35	*EST				
OC <sub>2</sub> H <sub>5</sub>	(8.0) IP is onset of phot	(181) coelectron b	(756) and (81PFI/GUI)	-4 ).	-16	*EST	46185-83-5			
С <sub>2</sub> H <sub>5</sub>	(8.1) IP is onset of phot	(192) oelectron b	(804) and (81PFI/GUI)	<i>5</i> ).	23	*EST	13720-91-7			
C <sub>11</sub> H <sub>12</sub> +							****			
C≡C-(CH <sub>2</sub> ) <sub>2</sub> CH <sub>3</sub>	(≤8.29±0.02)	(≤252)	(≤1055)	61	255	*EST	4250-81-1			
C=C-CH(CH312	(8.35±0.08) IP is onset of phot	(252) oelectron ba	(1053) and (81ELB/LIE)	59 ).	247	•EST	1612-03-9			

Table 1. Positive Ion Table - Continued

	Table	I. Posi	tive Ion Tab	le - Con	tinued ——————		
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol		(Neutral) nol kJ/mol	Neutral reference	CAS registry number
С <sub>11</sub> H <sub>12</sub> + СH <sub>3</sub>	(8.16±0.08) IP from 81ELB/L	(263) IE.	(1102)	75	315	*EST	769-26-6
H <sub>3</sub> C H	(≤8.17) IP from 84BAI/D	(≤253) OM.	(≤1058)	65	270	•EST	23063-31-2
	(≤8.42±0.05) IP from 82HAS/N	(≤224) ŒU, 82LI	(≤938) EV/LIA.	30	126	*EST	4486-29-7
	(8.05)	(228)	(956)	43	179	*EST	60582-10-7
	(8.19)	(232)	(969)	43	179	*EST	60582-11-8
C <sub>11</sub> H <sub>12</sub> N <sub>2</sub> O <sub>2</sub> + COOH	(≤7.5) See also: 83CAN/F	(≤115) IAM.	(≤481)	-58	~-243	*EST	54-12-6
C <sub>11</sub> H <sub>12</sub> O <sup>+</sup>	(8.6±0.05) IP from 81SCH/GI	(182) RO.	(762)	-16	-68	81SCH/GRO	15753-84-1
H <sub>3</sub> C COCH <sub>3</sub>	(8.5±0.05) IP is onset of photo	(180) electron l	(752) band (81SCH/C	–16 GRO).	-68	*EST	4023-84-1

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>11</sub> H <sub>12</sub> O+										
CH3 COCH3	8.5±0.05 IP from 79SCH/G	183 RU, 80GR	766 .U/SCH, 81SCH	-13 //GRO.	<b>-</b> 54	79SCH/GRU	16927-82-5			
CH <sub>3</sub>	(7.8±0.05) IP from 79SCH/G	(170) RU.	(711)	-10	-41	79SCH/GRU	2513-25-9			
	≤8.8 IP from 84MAR/k	(≤208) &AY.	(≤871)	5	22	*EST				
C <sub>11</sub> H <sub>12</sub> O <sub>2</sub> +	(8.2) IP from 79SCH/G	(146) RU, 80GR	(612) U/SCH.	-43	-179	79SCH/GRU	10542-87-7			
0	(8.1) IP is onset of phot	(205) oelectron l	(860) pand.	19	78	*EST	60526-44-5			
C <sub>11</sub> H <sub>13</sub> N <sup>+</sup> CN CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	(9.77±0.1)	(254)	(1064)	29±0.2	121±1	*EST	20651-74-5			
NC- (CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	(10.08±0.1)	(261)	(1094)	29±0.2	121±1	*EST	20651-73-4			
(CH3)3C-CN	(8.8) IP is onset of phot	(229) oelectron t	(959) pand (85BAI/M	26 IS2). See aisc	110 b: 86ORL/MIS	85ORL/MIS	4210-32-6			

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Tabl	e - Contir	ıued		
ION Neutral	Ionization potential eV	•	Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>11</sub> H <sub>13</sub> N <sup>+</sup>							
	(7.85±0.02)	(222)	(930)	41	173	*EST	4363-25-1
C <sub>11</sub> H <sub>13</sub> N <sub>2</sub> O <sub>2</sub> +							
CH2-CH NH2 )	From proton affi	82 nity of L-tr	344 yptophan (RN	54-12-6). PA :	= 225.4 kcal/m	ol, 943. kJ/mol.	
C <sub>11</sub> H <sub>14</sub> +				<u> </u>			
	≤8.40±0.02	(≤198)	(≤827)	4±0.7	17±3	*EST	1075-16-7
CH <sub>3</sub> CH <sub>3</sub>	(8.47)	(195)	(815)	-0.5±0.2	~2±1	78OSB/SCO	4912-92-9
CH <sub>3</sub>	(8.47)	(195)	(815)	0.5±0.2	-2±1	*EST	20836-11-7
C <sub>2</sub> H <sub>5</sub>	(7.87)	(260)	(1089)	79	<del>3</del> 30	*EST	49542-94-1
	(8.25) IP is onset of phot	(286) oelectron l	(1196) pand (82SPA/K	96 OR).	400	*EST	58738-49-1
C <sub>11</sub> H <sub>14</sub> N <sup>+</sup>					<u> </u>		
(N) H+	From proton affin PA = 232.0 kcal/n			noquinoline (I	RN 4363-25-1).		

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Table 1. Positive Ion Table - Continued

	Table	1. Positiv	e Ion Table  -	- Continu	ued		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number
C <sub>11</sub> H <sub>14</sub> N <sub>2</sub> +	(≤7.69±0.16)	(≤215)	(≤900)	38	158	*EST	87-52-5
CH2/2NHCH3	(7.7) IP is onset of pho	(206) toelectron b	(864) and.	29	121	*EST	61-49-4
H <sub>3</sub> C (CH <sub>2</sub> ) <sub>2</sub> NH <sub>2</sub>	(7.6) IP is onset of pho	(201) toelectron b	(839) and.	25	106	•est	1821-47-2
C <sub>11</sub> H <sub>14</sub> N <sub>2</sub> O + CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>	(≤7.68±0.12)	(≤174)	(≤729)	-3	-12	*EST	608-07-1
C <sub>11</sub> H <sub>14</sub> O + CH <sub>3</sub> H <sub>3</sub> C — CH <sub>3</sub> CH <sub>3</sub>	(8.2) IP is onset of photon	(140) coelectron b	(586) and (78CEN/FRA		-204.9±3.6	77PED/RYL	1667-01-2
C <sub>11</sub> H <sub>14</sub> O <sub>2</sub> + HOOC — СССЧ <sub>3</sub> У <sub>3</sub>	(8.6) IP is onset of phot	(103) coelectron ba	(431) and (85BAI/MIS	–95 2). See also:	–399 86ORL/MIS.	85ORL/MIS	98-73-7
$\begin{array}{c c} \hline C_{11}H_{14}O_{2}Si^{+} \\ \hline \\ C_{0} & \begin{array}{c} CH_{3} \\ Si \\ C_{2}H_{5} \end{array} \end{array}$	(8.1) IP is onset of phot	(138) oelectron ba	(577) and (83ZYK/ER	-49 C).	-205	*EST	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>11</sub> H <sub>15</sub> N <sup>+</sup>	(7.1) IP is onset of pho	(172) toelectron b	(718) and (82ROZ	8 /HOU2).	33	*EST	4096-20-2
CH <sub>3</sub>	(6.8) IP is onset of pho	(184) toelectron b	(771) and (82ROZ	27 /HOU2).	115	*EST	41378-30-7
H <sub>3</sub> C CH <sub>3</sub>	(7.0) IP is onset of pho	(230) toelectron b	(961) and (82ROZ	68 /HOU2).	286	*EST	19199-06-5
CH <sub>3</sub>	(≤7.48) IP from 82ROZ/F		(≤933)	50	211	*EST	81506-10-7
C <sub>11</sub> H <sub>15</sub> NO <sub>2</sub> S +	(7.0) IP is onset of phot	(129) coelectron ba	(538) and (84CAU)	-33 FUR).	-137	*EST	
C <sub>11</sub> H <sub>15</sub> NO <sub>3</sub> + H <sub>3</sub> CCO CH <sub>3</sub> H <sub>3</sub> C N COOC <sub>2</sub> H <sub>5</sub>	≤8.26 IP from 81CAU/C		(≤227)	-136	-570	*EST	
H <sub>3</sub> C COOC <sub>2</sub> H <sub>5</sub> H <sub>3</sub> CCO N CH <sub>3</sub>	(≤8.23) IP from 81CAU/C		(≤224)	-136	<b>-</b> 570	*EST	6314-22-3
C <sub>11</sub> H <sub>16</sub> <sup>+</sup>	(8.42±0.1)	(184)	(768)	-11	-44	*EST	1595-04-6

Table 1. Positive Ion Table - Continued

			e ion lable -				
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>11</sub> H <sub>16</sub> +							
H <sub>3</sub> C (CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	(8.35±0.1)	(182)	(761)	-11	<b>-45</b>	*EST	1595-05-7
H3C(СН3)3	8.28 IP from 86ORL/N	(178) IIS. See also	(744) o: 85BAI/MIS.	-13	-55	85ORL/MIS	98-51-1
CH2-C(CH3)3	≤8.7	(≤187)	(≤784)	-13	-55	*EST	1007-26-7
H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub>	7.92±0.02 See: 84HOW/GO	(165) N.	(690)	-18	<b>-74</b>	•EST	700-12-9
C <sub>11</sub> H <sub>16</sub> BrNO <sub>2</sub> +							
CH <sub>3</sub> O OCH <sub>3</sub> OCH <sub>3</sub> NH <sub>2</sub>	(7.4) IP is onset of phot	(97) coelectron b	(406) and (81DOM/EA	-74 AT).	-308	*EST	60917-67-1
$Br \xrightarrow{OCH_3} NH_2$	(7.3) IP is onset of phot	(97) oelectron ba	(404) and (81DOM/EA	-72 AT, 82LEV/	-300 LIA).	•EST	64638-07-9
H <sub>3</sub> CO CH <sub>3</sub>	(7.4) IP is onset of phot	(102) oelectron ba	(425) and (81DOM/EA	-69 .T).	-289	*EST	32156-25-5
C <sub>11</sub> H <sub>16</sub> N <sup>+</sup>						7-11	
( H+	From proton affini 945. kJ/mol.	154 ity of 1-pher	642 nylpiperidine (RN	l 4096-20-2)	. PA = 225.8 kca	al/mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on)	$\Delta_f H$ (Ne kcal/mol	utral)	Neutral reference	CAS registry
C <sub>11</sub> H <sub>16</sub> O+							
н <sub>3</sub> со—О—сісн <sub>3</sub> і <sub>3</sub>	(7.77) IP from 86ORL/N	(138) IIS.	(576)	-41.5	-173.8	86ORL/MIS	5396-38-3
СН <sub>3</sub> ОСН(СН <sub>3</sub> ) <sub>2</sub> СН <sub>3</sub>	8.49	(162)	(676)	-34	-143	*EST	54350-31-1
H <sub>3</sub> C CH <sub>3</sub>	(≤8.28)	(≤165)	(s692)	-26	-107	•EST	61248-63-3
C <sub>11</sub> H <sub>16</sub> OS +							
о    	(≤8.50) 2 IP from 81MOH/J	(≤163) IIA.	(≤681)	-33	-139	*EST	77919-66-5
°5—acH3)3	(≤8.33) IP from 81MOH/J	(≤162) ∏A.	(≤678)	-30	-126	*EST	49833-45-6
O H <sub>3</sub> C H <sub>3</sub> C H <sub>3</sub> C S	(8.25) IP is onset of phot	(144) oelectron b	(601) and (80FRO/WE	-47 3S).	-195	*EST	75503-13-8
C <sub>11</sub> H <sub>16</sub> O <sub>2</sub> +							
CH3 CH2 CH2	(≤9.05) IP from 81NES/BA	(≤112) AI.	(≤468)	-97	-405	*EST	10309-20-3
O CH3 H3C CH3 H3C O	(8.86) IP is onset of phot	(108) oelectron b	(450) and (80FRO/WE	-97 3S).	-405	•EST	57239-03-9

Table 1. Positive Ion Table - Continued

	Table	1. Posit	tive Ion Tabl	e - Cont	inued		
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry
C <sub>11</sub> H <sub>16</sub> S +			· · · · · · · · · · · · · · · · · · ·				
H3CS———CICH3	) <sub>3</sub> (≤7.83±0.05)	(≤179)	(≤747)	-2	-8	*EST	7252-86-0
SCICH <sub>3</sub> ) <sub>3</sub>	(≤8.35)	(≤188)	(≤788)	<b>-4</b>	-18	*EST	34786-26-0
н <sub>3</sub> ССІСН <sub>3</sub>	(≤8.31) 3	(≤187)	(≤784)	<del>-</del> 4	-18	*EST	7439-10-3
C <sub>11</sub> H <sub>16</sub> S <sub>2</sub> +							<u>-</u>
SH3C CH3 H3C S	(8.2) IP is onset of pho	(193) toelectron	(806) a band (80FRO/	4 WES).	15	*EST	75503-14-9
C <sub>11</sub> H <sub>17</sub> N <sup>+</sup>							
H <sub>3</sub> C CH <sub>3</sub>	(7.24)	(174)	(729)	7	30	*EST	13021-15-3
H <sub>3</sub> C N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(6.90) IP from charge tra IP (C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> )				4 tions; reference	*EST standard:	91-67-8
H <sub>3</sub> C N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(6.83) IP from charge tra IP (C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> )					*EST standard:	613-48-9
C <sub>11</sub> H <sub>17</sub> NO <sub>2</sub> +			· ·		<del></del>	· y	
H <sub>3</sub> CO OCH <sub>3</sub> NH <sub>2</sub> CH <sub>3</sub>	(≤8.30) IP from 81DOM/I	(≤130) ≟AT.	(≤544)	-61	-257	*EST	15402-81-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>11</sub> H <sub>17</sub> NO <sub>2</sub> + OCH <sub>3</sub> H <sub>3</sub> CO - NH <sub>2</sub>	(7.4) IP is onset of phot	(99) coelectron b	(416) and (81DOM/E.	–71 AT, 82LEV/	-298 LIA).	*EST	23690-13-3
ОСН <sub>3</sub> ОСН <sub>3</sub> СН <sub>3</sub>	(7.1) IP is onset of phot	(94) oelectron b	(395) and (81DOM/E.	–69 AT, 82LEV/	-290 LIA).	*EST	13641-74-2
OCH <sub>3</sub> NH <sub>2</sub> CH <sub>3</sub> OCH <sub>3</sub>	(8.18) IP from 81DOM/I	(117) EAT.	(491)	-71	298	*EST	23690-14-4
H <sub>3</sub> CO	(≤8.03±0.06) See also: 81DOM/	-	(≤492)	-68	-283	*EST	120-26-3
C <sub>11</sub> H <sub>18</sub> +			· · · · · · · · · · · · · · · · · · ·			,	
H <sub>3</sub> C CH <sub>3</sub>	(8.4) IP is onset of phot	(225) oelectron ba	(940) and.	31	130	*EST	33470-40-5
СНЗ	(9.17±0.02)	(170.9)	(715.0)	-40.6±0.3	−169.8±1.4	79CLA/KNO	768-91-2
CH <sub>3</sub>	9.24	176	737	-36.9	-154	79CLA/KNO	
$\bigcirc$	(8.5) IP is onset of photo	(232) oelectron ba	(972) and (82SPA/GL)	36 E).	152	•EST	52879-54-6

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol k	J/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>11</sub> H <sub>18</sub> N <sup>+</sup>									
H <sub>3</sub> C CH CH	From proton affir PA = 232.9 kcal/r	ity of 2,6-diiso		(RN 6832-	21-9).				
(CH <sub>2</sub> I <sub>5</sub> CH <sub>3</sub>	From proton affin 958. kJ/mol.		72 Ipyridine (RN	1129-69-7).	PA = 228.9 kg	cal/mol,			
( H <sub>3</sub> C ) N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> )H	+ From proton affin 956. kJ/mol.		78 5H <sub>4</sub> N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(RN 91-67	-8). PA = 228.	9 kcal/mol,			
(H <sub>3</sub> C)N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> )H+	From proton affin 956. kJ/mol.		87 <sub>5</sub> H <sub>4</sub> N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(RN 613-4	3-9). PA = 225	8.6 kcal/mol,			
C <sub>11</sub> H <sub>18</sub> O <sub>4</sub> +									
CIOC2H513	(8.7) IP is onset of phot		90) 1 (83ZYK/ERO	-155 C).	-649	*EST	75905-10-1		
C <sub>11</sub> H <sub>18</sub> S <sub>2</sub> +		· · · · · · · · · · · · · · · · · · ·							
H <sub>3</sub> C CH <sub>3</sub>	7.65 IP is onset of phot		48) I (83JIA/MOH	26 ().	110	*EST			
C <sub>11</sub> H <sub>19</sub> N <sup>+</sup>					***				
$\bigcirc$	(≤7.44±0.03)	(≤162) (≤6	576)	-10	-42	*EST	2981-10-4		

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>11</sub> H <sub>19</sub> NO +										
H <sub>3</sub> C NH(n-C <sub>3</sub> H <sub>7</sub> )	(≤8.03) IP from 82PFI/GI	(≤131) ER.	(≤548)	54	-227	*EST	56570-54-8			
CH <sub>3</sub> NH (i-C <sub>3</sub> H <sub>7</sub>	(≤7.94) } IP from 82PFI/G	(≤125) ER.	( <b>≤</b> 525)	-58	-241	*EST	80555-73-3			
C <sub>11</sub> H <sub>20</sub> +										
$(\text{tert-C}_4\text{H}_9)_2\text{C} = \text{C} = \text{CH}_2$	(≤8.55)	(≤206)	(≤860)	8	35	*EST	22585-31-5			
(CH <sub>3</sub> ) <sub>3</sub> CCH = C = CHC(C	H <sub>3</sub> ) <sub>3</sub> (8.6) IP is onset of pho	(193) toelectron t	(807) pand (85ELS/VF	-5 ER).	-23	*EST	42066-39-7			
1-C <sub>11</sub> H <sub>20</sub>	(9.90±0.02)	(233)	(976)	5	21	*EST	2243-98-3			
2-C <sub>11</sub> H <sub>20</sub>	(9.28±0.02)	(214)	(897)	0.5	2	*EST	60212-29-5			
3-C <sub>11</sub> H <sub>20</sub>	(9.17±0.02)	(212)	(888)	0.8	3	*EST	60212-30-8			
4-C <sub>11</sub> H <sub>20</sub>	(9.13±0.02)	(211)	(884)	0.8	3	*EST	60212-31-9			
5-C <sub>11</sub> H <sub>20</sub>	(9.11±0.02)	(211)	(882)	0.8	3	•EST	2294-72-6			
C <sub>11</sub> H <sub>20</sub> O <sup>+</sup>										
(CH3)3C.	(≤8.45)	(≤147)	(≤613)	<b>-48</b>	-202	•EST	14743-58-9			
C <sub>11</sub> H <sub>20</sub> O <sub>2</sub> +	and the same of th									
(СН <sub>3</sub> ) <sub>3</sub> С С(СН <sub>3</sub> ) <sub>3</sub>	(7.9)  Heat of formation  IP is onset of pho			−126±1 to enol form.	528±4	81FER/RIB	1118-71-4			
C <sub>11</sub> H <sub>21</sub> N <sup>+</sup>										
$\bigcirc^{N}$	(≤7.93±0.03)	(≤146)	(≤609)	37	-156	*EST	3319-01-5			
-							·			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H( kcal/mo	Ion) I kJ/mol	Δ <sub>f</sub> H(No		Neutral reference	CAS registry number			
$C_{11}H_{22}^+$ $C_2H_5CH_2C(C_2H_5) = C(C_2H_5)$	<sup>2</sup> 2 <sup>H</sup> 5)2 (8.04±0.02)°	(145)	(606)	-41	-170	*EST	50787-14-9			
C <sub>11</sub> H <sub>24</sub> + n-C <sub>11</sub> H <sub>24</sub>	(9.56) IP from charge tr	(156) ansfer equ	(651) ilibrium constan	-65±0.6	-271±3 ons (81MAU/S	77PED/RYL IE, 82LIA).	1120-21-4			
n-C <sub>8</sub> H <sub>17</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	(9.68) IP from charge tr	(157) ansfer equ	(656) ilibrium constant	-66 determination	-278 ons (81MAU/S)	*EST IE, 82LIA).	6975-98-0			
C <sub>12</sub> Co <sub>4</sub> O <sub>12</sub> + (ccol <sub>3</sub> cco (col <sub>3</sub> cco (col <sub>3</sub>	7.45 IP is onset of pho	(-246.2) toelectron	(–1030.1) band. See also: 8		2 −1748.9±13	82PIL∕SKI	17786-31-1			
C <sub>12</sub> F <sub>8</sub> +	(≤9.1±0.1)	(≤−56)	(≤−234)	-266	-1112	*EST	1554-93-4			
C <sub>12</sub> F <sub>10</sub> +	(9.40±0.02)	(-115)	(-480)	-332±3	-1387±12	79PRI/SAP2	434-90-2			
C <sub>12</sub> F <sub>12</sub> +	11.14 IP is onset of phot	(-211) oelectron	(-884) band (84HEI/W	-468 IR).	-1959	*EST	32937-02-3			
C <sub>12</sub> F <sub>27</sub> N + (n-C <sub>4</sub> F <sub>9</sub> ) <sub>3</sub> N	(11.3) IP is onset of phot	(-1067) oelectron	(-4466) band (82ELB/D)	−1328±2 E, 83MOL/P		79ERA/KOL	311-89-7			
C <sub>12</sub> Fe <sub>3</sub> O <sub>12</sub> +	(7.44) IP is onset of phot	(-247) oelectron	(–1035) band (82DEK/W	-419±6 ON).	-1753±27	82PIL/SKI	17685-52-8			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$		Δ <sub>f</sub> H(Ne		Neutral	CAS registry
	eV	kcal/mol	KJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>12</sub> H <sub>6</sub> O <sub>2</sub> +	(8.6) IP is onset of pho	(305) toelectron b	(1275) and.	106	445	•EST	82-86-0
C <sub>12</sub> H <sub>8</sub> <sup>+</sup> E  C  C  C  C  C  C  C  C  C  C  C  C	(8.03) IP is onset of phot	(279) coelectron b	(1166) and (81GLE/SC	93 H).	391	*EST	15727-65-8
© C≡CH	(8.11) IP is onset of phot	(280) oelectron b	(1173) and (81GLE/SC	93 H).	391	•EST	2949-26-0
66	(8.22±0.04)	(252)	(1053)	62±0.2	260±1	81KUD/KUD	208-96-8
	7.56±0.02  IP derived from chin agreement (80M)				437±13 minations is	77PED/RYL	259-79-0
C <sub>12</sub> H <sub>8</sub> Br <sub>2</sub> N <sub>2</sub> <sup>+</sup>	(9.24) IP from 77NUY/M		(1355)	110.8	463.6	*EST	1601-98-5
C <sub>12</sub> H <sub>8</sub> FNO <sup>+</sup>	9.11 IP from 80GRU/SO		(927) o: 82LEV/LIA.	11	48	*EST	6238-65-9

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>8</sub> F <sub>2</sub> +	(8.35±0.02)	(147)	(616)	~45±1	−190±5	64SMI/GOV	388-82-9			
	(8.35±0.02)	(146)	(611)	<b>-4</b> 7	-195	*EST	396-64-5			
F	(8.00±0.02)	(138)	(577)	-47±1	−195±5	64SMI/GOV	398-23-2			
C <sub>12</sub> H <sub>8</sub> F <sub>2</sub> S <sub>2</sub> +				<del></del>						
F	(≤8.4) IP from 82GIO/B	(≤109) OC.	(≤456)	-85	-354	*EST	405-31-2			
C <sub>12</sub> H <sub>8</sub> N <sub>2</sub> +	(8.3) IP is onset of phot	(270) coelectron b	(1130) and.	79	329	*EST	66-71-7			
	8.35±0.02	(269)	(1127)	77	321	*EST	230-07-9			
	(7.9) IP is onset of phot	(277) oelectron b	(1159) and.	95	397	77SCH/PET	230-17-1			
	8.33±0.02	274	1148	82±0.7	344±3	80ARS	92-82-0			

Table 1. Positive Ion Table - Continued

radie 1. Positive ion radie - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mol	cutral) kJ/mol	Neutral reference	CAS registry			
C <sub>12</sub> H <sub>8</sub> N <sub>2</sub> O +										
	8.00±0.02	(247)	(1036)	63	264	*EST	304-81-4			
C <sub>12</sub> H <sub>8</sub> N <sub>2</sub> O <sub>4</sub> S <sub>2</sub> +										
0 <sub>2</sub> N	(≤8.98) 2 IP from 82GIO/B	(≤258) OC.	(≤1080)	51	214	*EST	100-32-3			
C <sub>12</sub> H <sub>8</sub> N <sub>4</sub> O <sub>4</sub> +	) <sub>2</sub>									
O <sub>2</sub> N O N	'2 (9.97) IP from 77NUY/N	(314) MES.	(1312)	83.6	349.8	*EST				
C <sub>12</sub> H <sub>8</sub> O +					<u>.</u>					
	7.9±0.05	202	845	20±1	83±5	77PED/RYL	132-64-9			
C <sub>12</sub> H <sub>8</sub> OS +										
	(8.1) IP is onset of photo	(206) coelectron	(863) band.	19	81	*EST	1013-23-6			
C <sub>12</sub> H <sub>8</sub> O <sub>2</sub> +										
	(7.5) IP is onset of phot	(158) oelectron l	(661) band.	-15	-63	82SHA	262-12-4			
C <sub>12</sub> H <sub>8</sub> O <sub>2</sub> S <sup>+</sup>										
	(8.9) IP is onset of phot	(171) oelectron l	(714) pand.	-35	-145	•EST	1016-05-3			
				· · · · · · · · · · · · · · · · · · ·						

Table 1. Positive Ion Table - Continued

	Table 1. Tostere fon Table – Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>8</sub> S +										
O'S O	7.90±0.03	231	967	49±0.7	205±1	79SAB	132-65-0			
C <sub>12</sub> H <sub>8</sub> S <sub>2</sub> +						** * . ***				
OX s	(7.7) IP is onset of pho	(201) toelectron t	(840) pand (81TRA/RE	23±1 D).	97±6	77PED/RYL	92-85-3			
C <sub>12</sub> H <sub>8</sub> Se +										
Se Se	(≤7.86) IP from 82TRA/R	(≤243) LOD.	(≤1018)	62	260	*EST	244-95-1			
C <sub>12</sub> H <sub>8</sub> Se <sub>2</sub> +						<del></del>				
OL2	(≤7.89) IP from 82TRA/R	(≤231) OD.	(≤968)	49	207	*EST				
C <sub>12</sub> H <sub>9</sub> +				<u> </u>	, <u>, , , , , , , , , , , , , , , , , , </u>					
(OLO) H+	From proton affin 851. kJ/mol.	267 ity of biphe	1116 nylene. (RN 259-7	79-0). PA =	= 203.4 kcal/mol,					
C <sub>12</sub> H <sub>9</sub> ClO <sub>2</sub> +										
CH <sub>2</sub> CI CH <sub>3</sub>	(9.25) IP is onset of photo	(242) oelectron b	(1010) and (80RED/FRI	28 3).	118	*EST	31599-79-8			
C <sub>12</sub> H <sub>9</sub> F <sup>+</sup>	(8.20±0.02)	(185)	(774)	-4	-17	*EST	321-60-8			

Table 1. Positive Ion Table - Continued

	Table	1. Post	ive Ion Tabl	e - Conti	nuea		
ION Neutral	Ionization potential		(Ion) ol kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>12</sub> H <sub>9</sub> F <sup>+</sup>	(8.00±0.02)	(180)	(755)	-4	-17	*EST	324-74-3
C <sub>12</sub> H <sub>9</sub> N <sup>+</sup>					**************************************	****	
O CN	(8.5) IP is onset of pho	(294) otoelectror	(1228) a band.	98	408	*EST	71906-57-5
ÇN ÇN	(8.7) IP is onset of pho	(301) otoelectron	(1259) band.	100	420	*EST	61346-79-0
NC O	(8.7) IP is onset of pho	(300) toelectron	(1255) band.	99	416	*EST	16513-60-3
	7.57±0.03	229	959	55±0.2	229±1	81KUD/KUD2	86-74-8
C <sub>12</sub> H <sub>9</sub> NO <sup>+</sup>	9.06 IP from 82LEV/L	(247) IA, 80GR	(1032) U/SCH.	38	158	*EST	91-02-1
	(9.6±0.1)	(261)	(1090)	39	164	*EST	5424-19-1
	(9.6±0.1)	(261)	(1090)	39	164	*EST	14548-46-0
	*						

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry		
C <sub>12</sub> H <sub>9</sub> NO <sub>3</sub> +  H <sub>3</sub> CO	(≤8.16±0.06)	(≤90)	(≤376)	-98	-411	•EST	22199-17-3		
C <sub>12</sub> H <sub>9</sub> N <sub>2</sub> +	From proton affii	224 nity of pher	938 nazine (RN 92-82-	0). PA = 2	23.7 kcal/mol, 930	5. kJ/mol.			
C <sub>12</sub> H <sub>10</sub> +									
CH-CHCH-CHC≡CH	(7.9) IP from 74KOP/S	(244) SCH.	(1019)	61.5	257.3	62MOM/BRA	940-50-1		
	7.95±0.02 See also: 74KOP/	226.9 SCH.	949.4	43.6±0.3	182.3±1.4	77PED/RYL	92-52-4		
	(7.68) IP from charge tra	(214) ansfer equil	(896) librium constant d	37±0.2 eterminatio	155±1 ons (80MAU, re-c	81KUD/KUD evaluated).	83-32-9		
CH-CH <sub>2</sub>	(7.7) IP is onset of phot	(229) coelectron t	(958) pand (81GLE/SCI	51 <del>I</del> ).	215	*EST	826-74-4		
	(≤8.1)	(≤286)	(≤1197)	99	415	•EST	19539-78-7		
	(7.5) IP is onset of photo	(269) oelectron b	(1127) eand (84AND/CEI	96 R).	403	*EST	10474-24-5		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>12</sub> H <sub>10</sub> +	(0.0)	(250)	(1002)	74	211	*207	
	(8.0) IP is onset of pho	(259) toelectron b	(1083) and (82HAS/NE	74 U).	311	*EST	7322-47-6
C <sub>12</sub> H <sub>10</sub> Be +							
Ве	(9.20±0.10)	(285)	(1193)	73±5	305±21	80TEL/RAB	22300-89-6
C <sub>12</sub> H <sub>10</sub> Hg <sup>+</sup>							
	8.30±0.03 See also: 81FUR/	285 PIA.	1192	93.5±0.8	391.4±3.2	77PED/RYL	587-85-9
C <sub>12</sub> H <sub>10</sub> N <sub>2</sub> +							
© N≈N O	(8.2) IP is onset of photon	(286) toelectron b	(1195) and. See also: 81l	97±0.7 NAT/FRA.	404±3	77SCH/PET	17082-12-1
C <sub>12</sub> H <sub>10</sub> N <sub>2</sub> O +							
$\bigcirc$ -N $=$ N- $\bigcirc$ -C	7.6 IP is onset of photo	(229) coelectron b	(958) and (81MIL√MIL	54 ., 82LEV/LI	225 (A).	*EST	20714-70-9
	(8.1) IP is onset of phot	(269) oelectron b	(1124) and (81MIL/CIL	81.7±0.6 ).	342±2.4	86KIR/ACR	495-48-7
C <sub>12</sub> H <sub>10</sub> O <sup>+</sup>	(8.23)	(185)	(773)	-5±2	-21±8	*EST	941-98-0

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>[</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>10</sub> O+	(7.80±0.02)	(181)	(756)	0.7	3	*EST	90-43-7			
	(7.78±0.03)	(180)	(754)	0.7	3	*EST	92-69-3			
	8.09±0.03	183	766	<b>-</b> 3.6±0.4	-14.9±1.8	77PED/RYL	101-84-8			
C <sub>12</sub> H <sub>10</sub> OS <sup>+</sup>					~					
	(8.3) IP is onset of phot	(217) toelectron l	(908) pand.	26±0.7	107±3	77PED/RYL	945-51-7			
С <sub>12</sub> H <sub>10</sub> O <sub>2</sub> +	(7.71) IP is onset of phot	(111) coelectron b	(464) pand (83KLA/KC	-67 OV).	280	*EST	86-87-3			
(CH2C00H	(8.05) IP from 83KLA/K	(118) OV.	(495)	-67	-282	•EST	581-96-4			
	(8.5) IP is onset of phot	(227) oelectron b	(948) pand (85ALB/HE	31 IL).	128	*EST				
C <sub>12</sub> H <sub>10</sub> O <sub>2</sub> S <sup>+</sup>	9.16±0.03 See: 81TRA/RED	183	765	-28±0.7	-119±3	77PED/RYL	127-63-9			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry					
C <sub>12</sub> H <sub>10</sub> S <sup>+</sup>											
© S	7.86±0.04 See also: 81TRA/I	236 989 RED.	55±0.7	231±3	77PED/RYL	139-66-2					
S	(7.91) IP is onset of phot	(232) (972) toelectron band (81GUT/BE	50 S).	209	*EST						
C <sub>12</sub> H <sub>10</sub> S <sub>2</sub> +											
© s-s ©	≤8.3 IP from 82GIO/BO	≤250 ≤1045 OC.	58±1	244±4	77PED/RYL	882-33-7					
	(7.4) IP is onset of photo	(223) (931) ocelectron band (81GUT/BE	52 S).	217	*EST	75574-98-0					
C <sub>12</sub> H <sub>10</sub> S <sub>3</sub> +											
\$-5-S	(7.2) IP is onset of photo	(221) (925) oelectron band (81GUT/BES	<i>55</i> S).	230	*EST	75574-99-1					
C <sub>12</sub> H <sub>10</sub> Se +						**************************************					
<b>○</b> Se <b>○</b>	(≤7.79) IP from 82TRA/RC	(≤248) (≤1038) OD.	68.4±1.2	~286.4±5.2	77PED/RYL	1132-39-4					
C <sub>12</sub> H <sub>11</sub> +											
((()) H <sup>+</sup>	From proton affini	213 892 ity of biphenyl (RN 92-52-4).	PA = 196	.1 kcal/mol, 820. k	IJ/mol.						
(60) H+	From proton affinit PA = 203.5 kcal/m	199 834 ty of acenaphthene (RN 83-3 iol, 851. kJ/mol.	2-9).								

Table 1. Positive Ion Table - Continued

Table 1. Fositive foil Table - Continued										
ION Neutral	Ionization potentia eV		on) kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>11</sub> ClO <sup>+</sup>			V - 2 - 40.4			-M				
CHCI	9.0 IP from 84MAR	(204) VKAY.	(853)	-4	-15	*EST				
C <sub>12</sub> H <sub>11</sub> N <sup>+</sup>										
	7.16±0.04	217	910	52±0.7	219±3	78STE	122-39-4			
C <sub>12</sub> H <sub>11</sub> P+			****							
	(7.80±0.01)	(234)	(979)	54	226	*EST	829-85-6			
C <sub>12</sub> H <sub>12</sub> +			<del>15 11 11 1</del>	. 14 1/2						
©ÇH <sub>3</sub>	7.78±0.03	199	834	20	83	69STU/WES	571-58-4			
ċн <sub>3</sub>	(9.0) IP is onset of pho	(344) otoelectron b	(1441) and.	137	573	80BAR/STR	60323-50-4			
CH <sub>3</sub> CH <sub>3</sub>	(≤7.18±0.03)	(≤219)	( <b>≤915</b> )	53	222	•EST	56594-77-5			
СН3	(≤7.29±0.03)	(≤221)	(≤924)	53	221	*EST	56594-78-6			
CH <sub>3</sub>	(≤7.20±0.03)	(≤219)	(≤916)	53	221	•EST	46030-99-3			

Table 1. Positive Ion Table - Continued

				:- <u></u> :			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number
C <sub>12</sub> H <sub>12</sub> <sup>+</sup>	(≤7.27±0.03)	(≤221)	(≤923)	53	222	•EST	7206-52-2
н <sub>3</sub> ć СН <sub>3</sub>	(≤7.17±0.03)	(≤218)	(≤915)	53	223	*EST	10556-12-4
©Сн <sub>3</sub>	(≤7.08±0.03)	(≤216)	( <b>≤</b> 906)	53	223	•EST	56594-76-4
(C2H5)	7.95 IP from 83KLA/K	(203) COV.	(853)	20	86	*EST	939-27-5
CH3 CH3	(≤7.86±0.03)	(≤201)	(≤840)	20	82	69STU/WES	575-41-7
CH <sub>3</sub>	(≤7.85±0.03)	(≤201)	(≤839)	20	82	69STU/WES	571-61-9
CH3 CH3	(7.5) IP is onset of photo	(199) toelectron b	(832) and (81GUT/BES	26.0±0.2 S).	108.7±1	77PED/RYL	569-41-5
ООССН3	(≤7.89±0.03)	(≤202)	(≤845)	20	84	69STU/WES	581-40-8

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Table 1. Positive Ion Table - Continued

ION	Ionization potential	1. Positiv	on)	$\Delta_{f}H(Ne)$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>12</sub> H <sub>12</sub> + H <sub>3</sub> C CH <sub>3</sub>	(≤7.89±0.03)	(≤202)	(≤844)	20	83	69STU/WES	582-16-1
	(7.7) IP is onset of pho	(269) toelectron t	(1125) pand (81GLE/G	91 tUB).	382	*EST	21657-71-6
	(8.2) IP is onset of pho	(235) toelectron t	(984) pand (82HAS/N	- 46 EU).	193	*EST	7322-46-5
	(≤8.0)	(≤257)	(≤1076)	73	304	•EST	38310-32-6
H <sub>3</sub> C	(≤8.12±0.05)	(≤247)	(≤1033)	60	250	*EST	4897-73-8
	(8.15±0.05) IP from 81HEI/K	(312) OV.	(1306)	124	520	*EST	60323-52-6
CH <sub>3</sub>	(7.5) IP from 84AND/0	(239) CER.	(1002)	66	278	*EST	58790-01-5
C <sub>12</sub> H <sub>12</sub> Cr <sup>+</sup>	5.40 IP from 82CAB/C	177 COW.	741	53±2	220±8	77PED/RYL	1271-54-1

Table 1. Positive Ion Table - Continued

			ve ion rabic	Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>12</sub> H <sub>12</sub> Cr <sup>+</sup>							
⊕ cr ⊕	(5.4) IP is onset of pho	(260) toelectron l	(1087) band (85DAV/GA	135 AR).	566	*EST	12093-81-1
C <sub>12</sub> H <sub>12</sub> CrO <sub>3</sub> +		·					
H <sub>3</sub> C Cr(CO) <sub>3</sub> H <sub>3</sub> C Cr <sub>4</sub> CO) <sub>3</sub>	(6.8) IP is onset of pho	(45) toelectron l	(190) pand.	111±2	-466±10	77PED/RYL	12129-67-8
C <sub>12</sub> H <sub>12</sub> Mo+					<u> </u>		
© Mo-	(≤5.52±0.05)	(≤223)	(≤935)	96±5	402±20	77PED/RYL	12129-68-9
C <sub>12</sub> H <sub>12</sub> M <sub>0</sub> O <sub>3</sub> +				<del></del>			
ос со со сн, сн,	(7.0) IP is onset of photon	(60) toelectron t	(251) pand.	-101±3	-424±13	82PIL/SKI	12089-15-5
C <sub>12</sub> H <sub>12</sub> N <sub>2</sub> +			····				**************************************
O H N N N N N N N N N N N N N N N N N N	A value of 7.78 eV values of IP's of hy significantly highe associated with ion	ydrazines d r than the a	etermined by thre	shold meas	urements are usu	ally	122-66-7
CH <sub>3</sub> CH <sub>3</sub>	(8.2) IP is onset of phot	(241)	(1008) pand (83DOB/HII	52 L).	217	*EST	1134-35-6
C <sub>12</sub> H <sub>12</sub> O <sup>+</sup>							
осн3	(7.0) IP is onset of phot	(186) coelectron b	(778) pand (84AND/CE	25 R).	103	*EST	

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table ~ Continued										
ION Neutral	Ionization potential eV	$\Delta_{ m f} H({ m Ion})$ kcal/mol k ${ m J/mol}$	Δ <sub>f</sub> H(N kcal/mo	eutral) kJ/mol	Neutral reference	CAS registry number					
C <sub>12</sub> H <sub>12</sub> O <sup>+</sup>	≤8.95 IP from 84MAR/	(≤206) (≤864) KAY.	0	0	*EST						
C <sub>12</sub> H <sub>12</sub> O <sub>2</sub> +											
	(8.3) IP is onset of pho	(185) (775) toelectron band.	-6	-26	*EST	21377-44-6					
	(7.60) IP is onset of pho	(148) (620) toelectron band.	-27	-113	*EST	73650-68-7					
C <sub>12</sub> H <sub>12</sub> O <sub>3</sub> W <sup>+</sup>	(7.0) IP is onset of pho	(74) (309) toelectron band.	-87±4	-366±15	84ALT/CON2	12129-69-0					
C <sub>12</sub> H <sub>12</sub> S <sub>2</sub> +	(7.7) IP is onset of pho	(225) (940) toelectron band (81GU	47 7T/BES).	197	*EST	60948-99-4					
SCH <sub>3</sub>	7.4 IP is onset of pho	(214) (895) toelectron band.	43	181	*EST	10075-73-7					
SCH <sub>3</sub>	(7.3) IP is onset of pho	(212) (885) toelectron band.	43	181	*EST	10075-74-8					
H <sub>3</sub> CS SCH <sub>3</sub>	(7.2) IP is onset of phor	(215) (901) toelectron band	49	206	*EST	7343-31-9					

Table 1. Positive Ion Table - Continued

Table 1. Fositive for Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>12</sub> S <sub>2</sub> +										
H <sub>3</sub> CS SCH <sub>3</sub>	7.1 IP is onset of pho	(207) toelectron t	(866) band.	43	181	*EST	10075-77-1			
s s	(7.95)	(258)	(1079)	75	312	*EST	73650-69-8			
C <sub>12</sub> H <sub>12</sub> Si +	***************************************	<del></del>								
—SiH2——	(8.8) IP is onset of pho	(248) toelectron t	(1037) pand.	45	188	*EST	775-12-2			
CHNO+										
C <sub>12</sub> H <sub>13</sub> NO + CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.3) IP is onset of pho	(176) toelectron t	(734) pand (84GLE/BIS	7 ).	30	*EST				
C <sub>12</sub> H <sub>14</sub> +										
C=C-C(CH <sub>3</sub> ) <sub>3</sub>	3 (8.32±0.08) IP from 81ELB/L	(244) IE. See also	(1020) o: 85ORL/BOG.	52	217	*EST	4250-82-2			
	(≤8.7)	(≤247)	(≤1032)	46	193	*EST	20295-17-4			
	(≤8.0)	(≤229)	(≤958)	44	186	*EST	24139-33-1			
	(7.94)	(193)	(809)	10	43	*EST	495-52-3			

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Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mol	ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>14</sub> +	(8.09)	(200)	(836)	13	55	*EST	1076-17-1			
	(8.2) IP from 81PAD/P	(255) AT.	(1068)	66	277	*EST				
C <sub>12</sub> H <sub>14</sub> O <sub>2</sub> +				-						
	(8.1) IP is onset of photon	(152) toelectron	(638) band.	-34	-144	*EST	21377-45-7			
C <sub>12</sub> H <sub>15</sub> N <sub>2</sub> +										
H <sub>3</sub> CNH NHCH <sub>3</sub>	From proton affin PA = 230.0 kcal/r			naphthalenedia	amine (RN 207	734-56-9).				
C <sub>12</sub> H <sub>16</sub> <sup>+</sup> C(CH <sub>3</sub> ) <sub>3</sub>	8.29±0.04 See also: 81KOB/	(207) ARA.	(866)	16±1	66±4	77PED/RYL	3740-05-4			
H C-C(CH3)3	7.80±0.04 See also: 81KOB/4	(188) ARA.	(786)	8±2	33±9	77PED/RYL	3846-66-0			
	(≤9.16) IP from 83GLE/H	(≤300) AI2	(≤1255)	88.7	371.1	83GLE/HAI2	82865-42-7			
	(≤9.02) IP from 83GLE/H	(≤294) AI2	(≤1231)	86.2	360.7	83GLE/HAI2	87753-95-5			

Table 1. Positive Ion Table - Continued

				ble - Cont			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>12</sub> H <sub>16</sub> <sup>+</sup>	(7.5) IP is onset of pho	(196) toelectron	(821) band.	23 Nanu F	97 orob wrry	•est I	53011-74-8
	(≤8.9)	(≤223)	(≤934)	18	75	*EST	24139-32-0
	(8.7) IP is onset of photon	(278) toelectron	(1161) band.	77	322	*EST	5103-78-6
	(≤8.22)	(≤326)	(≤1365)	137	572	*EST	24375-17-5
	(8.6) IP from 81PAD/P	(231) AT.	(968)	33	138	*EST	262-30-6
	(8.2) IP from 82SPA/K	(331) OR.	(1385)	142	594	*EST	64371-17-1
С <sub>12</sub> H <sub>16</sub> M <sub>0</sub> +	(≤6.1±0.1)	(≤226)	(≤943)	85±1	354±6	82PIL/SKI	39333-52-3
C <sub>12</sub> H <sub>16</sub> N <sub>2</sub> +  CH <sub>2</sub> CH <sub>2</sub> N(CH <sub>3</sub> ) <sub>2</sub>	(7.3) IP is onset of phot	(201) oelectron	(842) band.	33	138	*EST	61-50-7

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>12</sub> H <sub>16</sub> O <sub>2</sub> +									
	8.5 IP is onset of photon	(133) toelectron t	(558) pand.	-63	-262	•EST	21377-46-8		
	(8.9±0.01) IP from 84OLI/FI	(161) .E.	(675)	-44	-184	*EST	5011-61-0		
C <sub>12</sub> H <sub>16</sub> W <sup>+</sup>									
СН3 СН3	(5.8) IP is onset of photon	(220) soelectron t	(919) pand.	86±1	359±6	82PIL/SKI	39333-53-4		
C <sub>12</sub> H <sub>17</sub> N <sup>+</sup>									
CH <sub>3</sub>	(7.1) IP is onset of photon	(169) toelectron t	(706) pand (82ROZ/HC	5 )U2).	21	*EST	7250-70-6		
CH <sub>3</sub>	(≤7.60) IP from 82ROZ/F	(≤219) IOU2.	( <b>≤</b> 918)	44	185	•EST	81506-12-9		
H3C CH3	(7.0) IP is onset of phot	(199) coelectron b	(834) pand (82ROŻ/HC	38 DU2).	159	•EST	64175-53-7		
C <sub>12</sub> H <sub>17</sub> NO <sub>4</sub> +  H <sub>5</sub> C <sub>2</sub> OOC CH <sub>3</sub> H <sub>3</sub> C N COOC <sub>2</sub> H <sub>5</sub>	(≤8.15) IP from 81CAU/C	(≤4) GIA.	(≤15)	-184	-771	*EST	2436-79-5		

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>17</sub> N <sub>2</sub> O <sub>6</sub> + 0 MH	From proton affir PA = (208) kcal/			neuridine (R	N 362-43-6).					
C <sub>12</sub> H <sub>18</sub> <sup>+</sup> n-C <sub>4</sub> H <sub>9</sub> C=CC=C(n-C <sub>4</sub> H <sub>9</sub> )	(8.67)	(258)	(1077)	58	241	77PED/RYL	1120-29-2			
(tert-C <sub>4</sub> H <sub>9</sub> C≖C) <sub>2</sub>	(8.61±0.02)	(249)	(1040)	50±1	209±5	77KUP/SHI	6130-98-9			
H3C(CH2)2	3 (≤8.31) IP from 80GLE/F	(≤176) HOP.	(≤736)	-16	-66	*EST	4815-57-0			
(CH <sub>3</sub> ) <sub>2</sub> HC CH(CH <sub>3</sub> ) <sub>2</sub>	(8.35)	(175)	(732)	-18	-75	*EST	100-18-5			
H <sub>5</sub> C <sub>2</sub> C <sub>2</sub> H <sub>5</sub>	(8.32) IP from 84HOW/	(173) GON.	(724)	-19	<b>-</b> 79	*EST	102-25-0			
H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	7.85 See also: 84HOW	160 '/GON.	670	-21±0.7	-87±3	77PED/RYL	87-85-4			
CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(≤7.83)	(≤219)	(≤917)	39	162	78GRE/LIE	7641-77-2			
	(≤9.05)	(≤198)	(≤830)	-10	-43	•EST	38992-78-8			

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne	utral) kJ/mol	Neutral reference	CAS registry number				
C <sub>12</sub> H <sub>18</sub> +	(≤9.50±0.03)	(≤219)	(£916)	−0.2±1	-1±5	73ENG/AND2	53862-33-2				
	(≤9.57±0.03)	(≤232)	(≤968)	11±2	45±8	73ENG/AND2	15914-95-1				
	(8.3) IP is onset of pho	(232) toelectron b	(972) pand.	41	171	*EST	40827-30-3				
C <sub>12</sub> H <sub>18</sub> Hg <sup>+</sup> ((CH <sub>3</sub> ) <sub>3</sub> CC≡C) <sub>2</sub> Hg	(9.03) IP is onset of phot	(285) toelectron b	(1194) pand (81FUR/PLA	77 \).	323	•EST	73838-84-3				
$C_{12}H_{18}O_4^+$ $(CH_3)_3C[C(=O)]_4C(CH_3)$	3 (8.5) IP from 85GLE/D	(25) OOB.	(105)	-171	715	*EST	19909-70-7				
С <sub>12</sub> H <sub>19</sub> + СH <sub>3</sub> СH <sub>3</sub> СH <sub>3</sub> СH <sub>3</sub> СH <sub>3</sub>	From proton affin 867. kJ/mol.	138 ity of hexan	576 nethylbenzene (R	N 87-85-4).	PA = 207.3 kcal	/mol,					
C <sub>12</sub> H <sub>19</sub> N <sup>+</sup>	(≤7.82) IP from 82ROZ/H	(≤241) IOU2.	(≤1007)	60	253	•EST	81506-11-8				
(СН3)3С	(6.90) IP from 86ORL/M	(158) IIS. See also	(661) o: 85BAI/MIS2.	-1.2	-4.9	85ORL/MIS	2909-79-7				

Table 1. Positive Ion Table - Continued

Table 1. Tostive for Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>12</sub> H <sub>19</sub> N <sup>+</sup>										
N(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub>	6.93 IP from charge tra IP C <sub>6</sub> H <sub>5</sub> N(CH <sub>3</sub> ) <sub>2</sub>	_		1 leterminatio	3 ons; reference	*EST standard:	2217-07-4			
C <sub>12</sub> H <sub>19</sub> NO +										
H <sub>3</sub> C N	(≤7.54) IP from 82PFI/GI	(≤138) ∃R.	(≤579)	-35	-148	*EST	3357-16-2			
C <sub>12</sub> H <sub>19</sub> NO <sub>2</sub> + OCH <sub>3</sub>										
H <sub>3</sub> CO CH <sub>3</sub> CH <sub>3</sub>	(7.2) IP is onset of pho	(87) toelectron b	(366) and (81DOM/EA	–79 AT).	-329	*EST	79440-50-9			
H <sub>3</sub> CO CH <sub>3</sub> NH <sub>2</sub>	(6.8) IP is onset of pho	(80) toelectron b	(335) and (81DOM/EA	-77 AT, 82LEV/	-321 LIA).	*EST	26011-50-7			
H <sub>3</sub> CO CH <sub>3</sub>	(6.9) 2 IP is onset of photo	(85) toelectron b	(356) and (81DOM/EA	–74 AT).	-310	*EST	56966-33-7			
C <sub>12</sub> H <sub>19</sub> NO <sub>2</sub> S + OCH <sub>3</sub>										
$H_3$ CS $CH_3$	(6.9) 2 IP is onset of phot	(92) coelectron ba	(385) and (81DOM/EA	-67 AT).	<b>-281</b>	*EST	79440-52-1			
H <sub>3</sub> CS CH <sub>3</sub>	(6.8) 2 IP is onset of phot	(91) coelectron ba	(383) and (81DOM/EA	-65 AT).	-273	*EST	61638-07-1			
H <sub>3</sub> CO CH <sub>3</sub>	(6.9) IP is onset of phot	(94) oelectron ba	(393) and (81DOM/EA	-65 AT).	-273	*EST				

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued												
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry					
C <sub>12</sub> H <sub>19</sub> NO <sub>3</sub> + OCH <sub>3</sub> H <sub>3</sub> CO H <sub>3</sub> CO	√NH2 (≤8.09±0.06) CH3	(≤88)	(≤370)	-98	-411	*EST	22199-12-8					
н <sub>3</sub> со осн	$(7.0)$ $NH_2$ $(7.0)$ $NH_3$ $(7.0)$ $(7.0)$ $(7.0)$	(54) toelectron t	(224) pand (81DOM/E	–108 AT, 82LEV	-451 /LIA).	*EST	22199-15-1					
H <sub>3</sub> CO OCH <sub>3</sub>	Y <sup>NH</sup> 2 (≤7.76±0.06) CH <sub>3</sub> i3	(≤67)	(≤279)	- -112	-470	*EST	22199-16-2					
H <sub>3</sub> CO OCH <sub>3</sub>	H -N - <sub>CH3</sub> (≤8.44±0.40)	(≤101)	(s421)	<b>-</b> 94	-393	•EST	4838-96-4					
C <sub>12</sub> H <sub>20</sub> <sup>+</sup> CH <sub>3</sub>	(9.15)	(159)	(664)	-52±0.7	−219±3	77STE/WAT	702-79-4					
C2HS	(9.2)	(250)	(1049)	38±0.5	161±2	81GOD/SCH2	14451-87-7					
	(8.6) IP is onset of photo	(233) toelectron b	(976) pand (82SPA/GL	35 E).	146	*EST	64601-40-7					

## $C_{12}H_{20}N^{+}$

H<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>

From proton affinity of  $C_6H_5N(n-C_3H_7)_2$  (RN 2217-07-4). PA = 228.6 kcal/mol, 956. kJ/mol.

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H kcal/me	(Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number				
C <sub>12</sub> H <sub>20</sub> N <sup>+</sup> ( C <sub>12</sub> H <sub>3</sub> )  C(CH <sub>3</sub> l <sub>3</sub> )	+ From proton affin 229.3 kcal/mol, 95	152 hity of 2-(1 9. kJ/mol	634 8-C <sub>4</sub> H <sub>9</sub> )C <sub>6</sub> H <sub>4</sub> N	(CH <sub>3</sub> ) <sub>2</sub> (RN	22025-87-2).						
C <sub>12</sub> H <sub>20</sub> N <sub>2</sub> + CH <sub>3</sub> CH <sub>3</sub> N(CH <sub>3</sub> ) <sub>2</sub> CH <sub>3</sub>	(7.3) IP is onset of photo	(196) toelectror	(822) n band (81NEL)	28 'GRE).	118	*EST	66102-30-5				
H <sub>3</sub> C N(CH <sub>3</sub> ) <sub>2</sub>	(6.4) IP is onset of phot	(168) coelectror	(704) a band (81NEL/	21 GRE).	86	*EST	54929-05-4				
C <sub>12</sub> H <sub>21</sub> N <sup>+</sup> (CH <sub>2</sub> =C(CH <sub>3</sub> )CH <sub>2</sub> ) <sub>3</sub> N	(7.8) IP from 79AUE/B	(208) SOW.	(869)	28	116	*EST					
C <sub>12</sub> H <sub>21</sub> NO +  O  CH <sub>3</sub> NH(1-C <sub>4</sub> H <sub>9</sub> )	(≤7.69) IP from 82PFI/GE	(≤111) ER.	(≤464)	-66	-278	•EST	27336-61-4				
H <sub>3</sub> C NH(i-C <sub>4</sub> H <sub>9</sub> )	(≤7.98) IP from 82PFI/GE	(≤122) ER.	(≤513)	-61	-257 `	*EST	82663-49-8				
H <sub>3</sub> C N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(7.3) IP is onset of phot	(116) oelectron	(486) band (82PFI/G	-52 ER).	-218	*EST	65115-73-3				
C <sub>12</sub> H <sub>21</sub> NO <sub>2</sub> +	(8.99±0.03) IP from 79GOL/K	(132) UL.	(552)	75	-315	*EST	4422-06-4				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>12</sub> H <sub>21</sub> O <sup>+</sup>							
(CH <sub>3</sub> ) <sub>3</sub> C C(CH <sub>3</sub> ) <sub>3</sub>	From the proton PA = 213.4 kcal/			ın (RN 4789-	40-6) (85HOU/R	OL).	
C <sub>12</sub> H <sub>22</sub> + 1-C <sub>12</sub> H <sub>22</sub>	(9.90±0.02)	(228)	(956)	0.1	0.4	*EST	765-03-7
2-C <sub>12</sub> H <sub>22</sub>	(9.29±0.02)	(210)	(878)	-4	-18	*EST	629-49-2
3-C <sub>12</sub> H <sub>22</sub>	(9.17±0.02)	(207)	(868)	<b>-4</b>	-17	*EST	6790-27-8
4-C <sub>12</sub> H <sub>22</sub>	(9.14±0.03)	(207)	(865)	<del>-</del> 4	-17	•EST	22058-01-1
5-C <sub>12</sub> H <sub>22</sub>	(9.09±0.03)	(206)	(860)	<b>-</b> 4	-17	*EST	19780-12-2
$CH_2 = C(t-C_4H_9)C(t-C_4H$	(9) = CH <sub>2</sub> (8.5) IP is onset of pho	(179) toelectron b	(750) and (84HON/Z	-17 HO).	<b>-7</b> 0	*EST	3378-20-9
trans, trans-((tert-C <sub>4</sub> H <sub>9</sub> )C	$CH = CH)_2$ (8.23±0.04)	(168)	(704)	-22	-90	*EST	22430-49-5
(CH <sub>2</sub> ) <sub>(O</sub> (z)	(8.78±0.15)	(173)	(727)	29	-120	76JEN	1129-89-1
(CH <sub>2</sub> ) <sub>IO</sub> (E)	(8.74±0.15)	(173)	(725)	-28	-118	76JEN	1486-75-5
$\bigcirc$ — $\bigcirc$	(9.41)	(164.8)	(689.5)	-52.2±.7	−218.4±3.1	78MON/ROS	92-51-3
C <sub>12</sub> H <sub>22</sub> CINO <sup>+</sup>	(9.18±0.03) IP from 79GOL/H	(160) KUL.	(668)	-52	-218	*EST	4806-74-0

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l	ion) kJ/mol	Δ <sub>f</sub> H(N kcal/mo	eutral) l kJ/mol	Neutral reference	CAS registry				
C <sub>12</sub> H <sub>22</sub> N + (CH <sub>2</sub> =C(CH <sub>3</sub> )CH <sub>2</sub> ) <sub>3</sub> NH	From proton affin	(163) lity of (CH	(684) 2=C(CH <sub>3</sub> )CH	(2) <sub>3</sub> N. PA =	(230.7) kcal/m	ol, (965.) kJ/mol.					
C <sub>12</sub> H <sub>22</sub> NO +											
( NH <sub>2</sub> ) <sub>H</sub> +	From proton affin PA = 220.0 kcal/r			.0.0 <sup>4,8</sup> ] dodec	can-2-ol.						
C <sub>12</sub> H <sub>22</sub> O +											
o	(8.96±0.03) IP from 79GOL/K	(123) IUL.	(514)	-84	-350	*EST	830-13-7				
C <sub>12</sub> H <sub>22</sub> Si <sub>2</sub> +											
(CH <sub>3</sub> ) <sub>3</sub> Si-Si(CH <sub>3</sub> ) <sub>3</sub>	(8.45) 3 IP is onset of phot	(132) oelectron l	(554) pand (82TRA/I	-62 RED).	-261	*EST	13183-70-5				
C <sub>12</sub> H <sub>23</sub> Cl <sup>+</sup>						<del></del>					
CI CI	(9.04±0.03) IP from 79GOL/K	(≤143) UL.	(≤598)	-65	-274	*EST	34039-83-3				
C <sub>12</sub> H <sub>23</sub> NO <sup>+</sup>											
MOH NOH	(8.84±0.03) IP from 79GOL/K	(154) UL.	(643)	-50	-210	*EST	946-89-4				
C <sub>12</sub> H <sub>24</sub> +					<del></del>	· · · · · · · · · · · · · · · · · · ·					
(Z)-(CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> C(CH <sub>3</sub> ) =	= CHC(CH <sub>3</sub> ) <sub>3</sub> (8.35±0.01)	(142)	(594)	-50	-211	*EST	27656-50-4				
$\langle \rangle$	(9.72±0.03) IP from 79GOL/K	(169) UL.	(707)	-55±0.5	-230±2	77PED/RYL	294-62-2				

Table 1	Docitivo	Ion Toble		Continued
Table L.	POSITIVE	ion Lable	_	Continuea

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ <sub>f</sub> H(	Ion) ol kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
С <sub>12</sub> H <sub>24</sub> O <sup>+</sup>	(9.26±0.03) IP from 79GOL/I	(119) KUL.	(499)	<del>-9</del> 4	-394	*EST	1724-39-6				
C <sub>12</sub> H <sub>24</sub> O <sub>6</sub> +	8.9 IP is onset of pho	(-22) toelectron	(-91) band (83BAK)	-227 'ARM, 82LEV	-950 /LIA).	*EST	17455-13-9				
C <sub>12</sub> H <sub>25</sub> N <sub>2</sub> +	From proton affii PA = 226.0 kcal/	-		.4]tetradecane	(RN 71058-67	/-8).					
C <sub>12</sub> H <sub>25</sub> O <sub>6</sub> +	H+ From proton affii (RN 17455-13-9).				cane (18-Crow	n-6)					
C <sub>12</sub> H <sub>26</sub> N <sub>2</sub> O <sub>4</sub> +	(≤8.4) IP from 83BAK/A	(≤52) ARM.	(≤218)	-141	-592	*EST	23978-55-4				
C <sub>12</sub> H <sub>27</sub> BO <sub>3</sub> + (n-C <sub>4</sub> H <sub>9</sub> O) <sub>3</sub> B	(≤10.72±0.74)	(s-27)	(≤−113)	-274±1	-1147±4	77PED/RYL	688-74-4				
C <sub>12</sub> H <sub>27</sub> N <sup>+</sup> (n-C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> N	(7.4) IP is onset of pho agreement with va						102-82-9				
C <sub>12</sub> H <sub>27</sub> P + (n-C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> P	(7.5) IP is onset of pho	(160) toelectron	(668) band.	-13±8	-56±35	77PED/RYL	998-40-3				
C <sub>12</sub> H <sub>28</sub> N + (n-C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> NH	From proton affin 985 kJ/mol (85BO		323 <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> N (RN 1	02-82-9). PA =	= 235.4 kcal/m	ol,					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>12</sub> H <sub>28</sub> N <sub>2</sub> + (n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NN(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub>	(≤7.74) Reported values are usually signifi geometry change	icantly highe	r than the adiaba	tic value be	cause of the large		60678-69-5
(n-C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NN(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	(≤7.77)  Reported values are usually signifigeometry change	icantly highe	r than the adiaba	tic value be	cause of the large		60678-68-4
C <sub>12</sub> H <sub>28</sub> Sn +							
(C <sub>3</sub> H <sub>7</sub> ) <sub>4</sub> Sn	(≤8.82)	(≤168)	(≤705)	-35±1	-146±6	77PED/RYL	2176-98-9
(iso-C <sub>3</sub> H <sub>7</sub> ) <sub>4</sub> Sn	(≤8.46)	<b>(≤166)</b>	(≤693)	-29±2	-123±7	77PED/RYL	2949-42-0
C <sub>12</sub> H <sub>30</sub> Ge <sub>2</sub> + ((C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> Ge) <sub>2</sub>	7.48±0.01	90	375	-83±2	-347±8	80TEL/RAB	993-62-4
C <sub>12</sub> H <sub>30</sub> N <sub>3</sub> P + P(N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> ) <sub>3</sub>	(≤7.19) IP from 82WOR/	(≤112) HAR.	(≤468)	-54±2	-226±10	77PED/RYL	2283-11-6
C <sub>12</sub> H <sub>30</sub> Sn <sub>2</sub> + [(C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> Sn] <sub>2</sub>	(6.60±0.02)	(115)	(482)	−37±2	-155±10	77PED/RYL	993-63-5
C <sub>12</sub> H <sub>31</sub> N <sub>3</sub> OP + HOP(N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> ) <sub>3</sub>	From proton affi PA = 230.0 kcal/			2622-07-3) (	85BOL/HOU).		
C <sub>12</sub> H <sub>36</sub> M <sub>02</sub> N <sub>6</sub> + M <sub>02</sub> ((CH <sub>3</sub> ) <sub>2</sub> N) <sub>6</sub>	(6.74)	(125)	(522)	-31±3	-128±13	79ADE/CAV	51956-20-8
C <sub>12</sub> H <sub>36</sub> N <sub>6</sub> W <sup>+</sup> W(N(CH <sub>3</sub> ) <sub>2</sub> ) <sub>6</sub>	(6.3) IP is onset of pho	(209) stoelectron b	(876) and.	64±3	268±14	79ADE/CAV	54935-70-5
C <sub>12</sub> H <sub>36</sub> N <sub>9</sub> P <sub>3</sub> +							
(H3C)2N P N P N(CH3)2	)2 (7.85±0.05)	(76)	(318)	-105±3	-439±13	80TEL/RAB	974-68-5
C <sub>12</sub> H <sub>36</sub> Si <sub>5</sub> + Si(Si(CH <sub>3</sub> ) <sub>3</sub> ) <sub>4</sub>	(7.41±0.01)	(37)	(156)	-134±10	-559±40	77PED/RYL	4098-98-0

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(l kcal/mol	ion) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>12</sub> O <sub>12</sub> Os <sub>3</sub> +	(7.6±0.3) IP is onset of pho	(–218) toelectron	(−911) band. See also: 8	−393±7 81GRE/MIN,	−1644±28 82SHE/HAL.	80CON	15696-40-9			
C <sub>12</sub> O <sub>12</sub> Ru <sub>3</sub> +	(7.3) IP is onset of pho	(-267) toelectron	(−1116) band. See also: 8	-435±6 81GRE/MIN. -	-1820±26	77PED/RYL	15243-33-1			
C <sub>13</sub> H <sub>7</sub> N <sub>3</sub> O +	(8.44)	(290)	(1211)	95	397	•EST	59019-84-0			
C <sub>13</sub> H <sub>8</sub> O <sub>2</sub> +	(8.42±0.03)	(174)	(727)	−20±2	-85±7	82JOH/KIM	90-47-1			
C <sub>13</sub> H <sub>9</sub> ClO <sup>+</sup>	9.64±0.04	(229)	(959)	7±2	29±8	*EST	134-85-0			
C <sub>13</sub> H <sub>9</sub> N <sup>+</sup>	7.8	249	1044	69±0.2	291±1	81KUD/KUD2	260-94-6			
	(8.14±0.02)	(244)	(1019)	56±2	234±7	81STE/BAR	85-02-9			

Table 1. Positive Ion Table - Continued

Table 1. Fositive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>13</sub> H <sub>9</sub> N <sup>+</sup>										
	(8.04±0.02)	(240)	(1007)	55±1	231±5	81STE/BAR	230-27-3			
	(8.31±0.02)	(250)	(1046)	58±1	244±6	81STE/BAR	229-87-8			
C <sub>13</sub> H <sub>9</sub> NO <sup>+</sup>										
	(7.45±0.02)	(222)	(930)	50	211	•EST	10399-73-2			
C <sub>13</sub> H <sub>10</sub> +					<del></del>		<del></del>			
	7.89±0.03 Value of IP from (80MAU, re-evalu			45±0.2 n constant dete	187±1 erminations	81KUD/KUD	86-73-7			
C <sub>13</sub> H <sub>10</sub> BrN <sup>+</sup>		<del></del>								
D Br NO	(8.6) IP from 80GRU/S	(274) SCH, 82LEV	(1146) '/LIA.	76	316	•EST	74309-56-1			
Br NO	(8.62)	(274)	(1148)	76	316	*EST				
Br N	(8.05) IP from 80GRU/S	(262) CH.	(1098)	77	321	*EST	76293-40-8			
Br N	(8.05) IP from 80SCH/R.	(258) AM.	(1081)	73	304	*EST	77275-12-8			

Table 1. Positive Ion Table - Continued

		<del></del>	ve ton tab	ic - Contin			
ION Neutral	Ionization potential eV		on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>13</sub> H <sub>10</sub> BrN <sup>+</sup>							
Br .	(≤8.15±0.05)	(≤258)	(≤1078)	70	292	*EST	5847-71-2
C <sub>13</sub> H <sub>10</sub> CIN+				-	······		
	(8.6) IP from 80GRU/	(262) SCH, 82LEV	(1096) V/LIA.	64	266	*EST	74309-55-0
cı O NO	(8.58)	(261)	(1094)	64	266	•EST	
Ci N	(8.07) IP from 80GRU/S	(251) SCH.	(1051)	65	272	*EST	5350-12-9
C <sub>1</sub>	8.06±0.01 IP from 80SCH/R	(247) AM, 82LEV	(1032) //LIA.	61	254	*EST	6772-77-6
C <sub>13</sub> H <sub>10</sub> FN <sup>+</sup>	3° 3 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		· · · · · · · · · · · · · · · · · · ·				
	(8.66) IP from 82LEV/L	(223) IA, 80GRU,	(931) /SCH.	23	96	*EST	74309-53-8
	(8.68)	(223)	(933)	23	96	*EST	
	(≤8.1) IP from 80SCH/R.		(≤866)	20	84	*EST	77275-10-6

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> H(Io	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>13</sub> H <sub>10</sub> FN <sup>+</sup>	(8.18) IP from 80GRU/S	(213) SCH.	(890)	24	101	*EST	76293-38-4
C <sub>13</sub> H <sub>10</sub> IN <sup>+</sup>	<del></del>						
	(8.3) IP from 80GRU/S	(281) SCH, 82LEV	(1175) //LIA.	89	374	*EST	74309-57-2
	(7.95) IP from 80GRU/S	(274) CCH.	(1147)	91	380	•EST	
	(7.95) IP from 80SCH/R.	(270) AM.	(1129)	86	362 .	*EST	6772-85-6
C <sub>13</sub> H <sub>10</sub> N <sup>+</sup>							
	From proton affin	203 ity of acridin	851 nc. (RN 260-94	·6). PA = 23	1.9 kcal/mol,		
C <sub>13</sub> H <sub>10</sub> N <sub>2</sub> O <sub>2</sub> +					~		
	(8.3) IP is onset of photo	(198) oelectron ba	(828) and.	6	27	*EST	37790-20-8
O <sub>2</sub> N GH	(8.4) IP is onset of photo	(240) oelectron ba	(1005) and.	47	195	•EST	69173-79-1
NO <sub>2</sub> NO	(8.30) IP from 80GRU/S0		(1086)	68	285	*EST	50385-24-5

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>13</sub> H <sub>10</sub> N <sub>2</sub> O <sub>2</sub> +	(8.3) IP from 80SCH/R	(255) AM.	(1069)	64	268	•EST	77340-84-2			
С <sub>13</sub> Н <sub>10</sub> О+	(8.47±0.03)	(210)	(879)	15±0.7	62±3	•EST	3218-36-8			
	9.05±0.05 IP from 78CEN/F	221 RA, 82LEV	923 //LIA.	12±0.7	50±3	78SAB/LAF3	119-61-9			
C <sub>13</sub> H <sub>10</sub> O <sub>2</sub> +	(8.3) IP is onset of phot	(160) oelectron b	(670) and.	−31.2±2	−131±8	*EST	1137-42-4			
	8.99±0.02	173	724	-34±0.7	-143±3	77PED/RYL	93-99-2			
C <sub>13</sub> H <sub>10</sub> O <sub>3</sub> +	(9.01±0.05)	(134)	(558)	−74±2	-311±9	77PED/RYL	102-09-0			
C <sub>13</sub> H <sub>11</sub> <sup>+</sup>	From proton affini	210 ty of fluore	880 ne (RN 86-73-7).	PA = 200	.0 kcal/mol, 837. k	IJ/mol.				

Table 1. Positive Ion Table - Continued

Table 1. I obtave for Table Continued									
ION Neutral	Ionization potential eV		on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>13</sub> H <sub>11</sub> CIN <sub>2</sub> O +	(7.7) IP is onset of pho	(217) otoelectron t	(910) pand (81MIL/MIL	40 .).	167	*EST	19116-23-5		
CH <sub>3</sub>	C <sup>1</sup> (7.7) IP is onset of pho	(217) otoelectron b	(910) pand (81MIL/MIL	40 .).	167	*EST	2491-56-7		
C <sub>13</sub> H <sub>11</sub> N <sup>+</sup>	7.9 IP is onset of pho	(232) otoelectron b	(972) pand.	50	210	*EST	538-51-2		
CH2 CN	(8.65) See also: 80GRU	(270) /SCH.	(1130)	71	295	*EST	15260-65-8		
CH <sub>2</sub>	(8.73)	(269)	(1125)	68	283	•EST	74309-58-3		
CH <sub>2</sub>	(8.90)	(277)	(1159)	72	`300	*EST	54813-56-8		
	(8.15) IP from 80GRU/S	(264) SCH.	(1105)	76	319	•EST	1519-59-1		
	(≤7.99±0.05) See also: 80SCH/	(≤252) RAM.	(≤1054)	68	283	*EST	538-49-8		

Table 1. Positive Ion Table - Continued

			TVC TON TAN		inucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) I kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number
C <sub>13</sub> H <sub>11</sub> N <sup>+</sup>							
C-H T-C	(≤8.10±0.05) See also: 80SCH/F	(≤256) RAM.	(≤1072)	69	290	*EST	5097-91-6
NO C C	(≤8.34±0.05) See also: 80SCH/R	(≤261) RAM.	(≤1093)	69	288	*EST	5097-93-8
NH <sub>2</sub>	(7.25) IP is onset of photo	(216) oelectron	(904) band (84GLE	49 VSCH).	205	*EST	7083-63-8
C <sub>13</sub> H <sub>11</sub> NO <sup>+</sup>			, <u>, , , , , , , , , , , , , , , , , , </u>		·		
OCH3	(8.72) IP from 82LEV/LI	(231) A, 80GR)	(966) U/SCH.	30	125	•EST	
C <sub>13</sub> H <sub>11</sub> N <sub>3</sub> O <sub>3</sub> +							
CH <sub>3</sub>	(7.7) IP is onset of photo	(221) pelectron	(924) band (81MIL)	43 MIL).	181	*EST	1435-68-3
OH NO2	(≤8.19) IP from 81MIL/MI	(≤232) L.	(≤971)	43	181	*EST	19020-84-9
С <sub>13</sub> H <sub>11</sub> O +	From proton affinit 882. kJ/mol.	167 by of (C <sub>6</sub> F	698 I <sub>5</sub> ) <sub>2</sub> CO (RN 1	.19-61-9). PA	= 210.9 kcal/m	ol,	

Table 1. Positive Ion Table - Continued

ION	Ionigation actuatist	Λ. την-		Λ . EI/N1	utral	Neutral	CAS registry
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol	kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		reference	number
C <sub>13</sub> H <sub>12</sub> +	8.55±0.03	230	965	33±0.7	140±3	77PED/RYL	101-81-5
CH3	(8.10±0.02)	(228)	(954)	41±2	172±7	77PED/RYL	643-58-3
CH <sub>3</sub>	(7.95±0.02)	(219)	(917)	36±2	150±8	*EST	643-93-6
О — Сн₃	(7.80±0.02)	(216)	(904)	36±2	151±8	*EST	644-08-6
	(≤9.06) IP from 83HOU/F	(≤289) RON.	(≤1210)	79	330	•EST	74437-39-1
	(8.0±0.1)	(266)	(1115)	82	343	*EST	29150-13-8
C <sub>13</sub> H <sub>12</sub> N <sub>2</sub> O + OH OH OH	(7.4) IP is onset of phot	(217) coelectron b	(910) and (81MIL/MII	47 .).	196	*EST	952-47-6
C <sub>13</sub> H <sub>12</sub> O + CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(8.1) IP is onset of phot	(186) oelectron b	(780) and.	−0.5±3	-2±11	77PED/RYL	2484-16-4

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number			
C <sub>13</sub> H <sub>12</sub> S+							·			
S-CH <sub>2</sub> -	(7.87±0.02)	(227)	(950)	46	191	*EST	831-91-4			
•										
C <sub>13</sub> H <sub>13</sub> P <sup>+</sup>										
CH3	(≤8.28±0.05) IP from 82IKU/K	(≤235) EB.	(≤984)	44	185	*EST	1486-28-8			
C <sub>13</sub> H <sub>14</sub> +										
CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.10)	(209)	(873)	45	188	*EST	941-81-1			
CH <sub>2</sub>	≤8.95 IP from 84MAR/k	(≤222) ⟨AY.	(≤929)	16	65	•EST				
C <sub>13</sub> H <sub>14</sub> O <sup>+</sup>				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
ОН	(7.82) IP from 81DAL/N	(197) IIB.	(824)	17	70	81DAL/NIB	64353-61-3			
C <sub>13</sub> H <sub>14</sub> OP+										
H <sub>3</sub> C . P	From proton affini PA = 216. kcal/mo	118 ity of (C <sub>6</sub> l ol, 904. kJ	494 H <sub>5</sub> ) <sub>2</sub> CH <sub>3</sub> PO (R /mol.	.N 2129-89-7	) (86TRA/MUN	ŋ.				
C <sub>13</sub> H <sub>14</sub> P+		· · · · · · · · · · · · · · · · · · ·								
© P CH3	From proton affini 963.5 kJ/mol.	180 ity of (C <sub>6</sub> 1	752 H <sub>5</sub> ) <sub>2</sub> (CH <sub>3</sub> )P (R	N 1486-28-8)	. PA = 230.3 kg	cal/mol,				

Table 1. Positive Ion Table - Continued

				e - Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>13</sub> H <sub>14</sub> Si +							
CH3	(8.75±0.15)	(229)	(959)	27	115	*EST	776-76-1
C <sub>13</sub> H <sub>15</sub> MnO <sub>3</sub> +							
ос с н <sub>3</sub> с м сн <sub>3</sub> н <sub>3</sub> с сн <sub>3</sub>	(7.0) IP is onset of pho	(14) otoelectron b	(57) and (81CAL/	–148 HUB).	-618	*EST	34807-89-1
C <sub>13</sub> H <sub>16</sub> +	<u>, , , , , , , , , , , , , , , , , , , </u>						
C=C-CH(C2H6)2	(8.24±0.08) IP from 81ELB/L	(239) .IE.	(1000)	49	205	*EST	
C <sub>13</sub> H <sub>16</sub> N <sub>2</sub> O <sub>2</sub> + CH <sub>2</sub> CH <sub>2</sub> NHCOCH	(7.03) IP is onset of pho	(109) toelectron b	(454) and (83CAN/	–54 HAM).	-224	*EST	
C <sub>13</sub> H <sub>16</sub> O +	(7.85) IP from 85ORL/N	(196) MIS.	(820)	15	63	85ORL/MIS	
C <sub>13</sub> H <sub>17</sub> N <sub>2</sub> +			<del>,</del>				
H <sub>3</sub> C NH N(CH) <sub>3</sub>	From proton affii PA = 235.6 kcal/s			8-naphthalened	liamine (RN	20723-57-0).	
C <sub>13</sub> H <sub>18</sub> +							
(CH <sub>2</sub> ) <sub>7</sub>	(8.0) IP is onset of pho	(195) toelectron b	(817) and.	11	45	*EST	3761-63-5
							····

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mo		Neutral) ol kJ/mol	Neutral reference	CAS registry				
C <sub>13</sub> H <sub>18</sub> N <sub>2</sub> O + H <sub>3</sub> CO CH <sub>2</sub> CH <sub>2</sub> N(CH <sub>3</sub> )	<sub>2</sub> (≤7.61±0.14)	(≤172) (≤721)	-3	-13	*EST	1019-45-0				
C <sub>13</sub> H <sub>19</sub> N <sup>+</sup> H <sub>3</sub> C CH <sub>3</sub>	(≤7.70) IP from 82ROZ/I	(≤202) (≤844) HOU2.	- 24	101	*EST	81506-14-1				
CH <sub>3</sub>	(7.35) IP is onset of pho	(185) (774) toelectron band (82I	16 ROZ/HOU2).	65	•EST	81506-15-2				
C <sub>13</sub> H <sub>21</sub> NO +	(≤7.67) IP from 82PFI/GI	(≤131) (≤546) ER.	-46	-194	*EST	13358-76-4				
C <sub>13</sub> H <sub>22</sub> N +		115 483 ity of 2,4-di-tert-buty I/mol, (968) kJ/mol.	ylpyridine (RN 299	939-31-9).						
(CH3)3C + C(CH3)3	From proton affin PA = 233.4 kcal/n	113 473 ity of 2,6-di-tert-buty nol, 976. kJ/mol.	ylpyridine (RN 585	i-48-4).						
C <sub>13</sub> H <sub>23</sub> N <sup>+</sup>	(6.8) IP is onset of phot	(184) (770) oelectron band (82A	27 LD/ARR).	114	*EST	84509-55-7				

Table 1. Positive Ion Table - Continued

•			ve foil fabi	e - Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>13</sub> H <sub>23</sub> NO +	(≤8.07) IP from 82PFI/GI	(≤122) ER.	(≤512)	-64	-267	*EST	82663-50-1
C <sub>13</sub> H <sub>24</sub> + 1-C <sub>13</sub> H <sub>24</sub>	(9.90±0.02)	(223)	(934)	-5	-21	*EST	26186-02-7
2-C <sub>13</sub> H <sub>24</sub>	(9.28±0.02)	(205)	(856)	-9	-39	*EST	28467-75-6
3-C <sub>13</sub> H <sub>24</sub>	(9.14±0.03)	(202)	(844)	-9	-38	*EST	60186-78-9
4-C <sub>13</sub> H <sub>24</sub>	(9.07±0.03)	(200)	(837)	-9	-38	*EST	60186-79-0
5-C <sub>13</sub> H <sub>24</sub>	(9.09±0.03)	(201)	(839)	<b>-</b> 9	-38	*EST	60186-80-3
6-C <sub>13</sub> H <sub>24</sub>	(9.05±0.03)	(200)	(835)	-9	-38	*EST	42371-66-4
(CH <sub>2</sub> ) <sub>6</sub> CH <sub>3</sub>	(8.37±0.02)	(232)	(969)	39±1	161±5	*EST	15232-86-7
C <sub>13</sub> H <sub>24</sub> Si <sub>2</sub> +	(8.26)	(152)	(637)	-38	-160	*EST	1899-74-7
CH <sub>2</sub> Si(CH <sub>3</sub> ) <sub>3</sub>	IP is onset of pho				100	LUI	1077-14-1
C <sub>13</sub> H <sub>25</sub> N <sup>+</sup>	(7.3) IP from 82ALD/A	(157) IRR.	(657)	-11	-47	81ALD/ARR	
C <sub>13</sub> H <sub>26</sub> + 1-C <sub>13</sub> H <sub>26</sub>	(9.38) IP from 81HOL/F	(172) IN.	(719)	-44.5	-186.2	*EST	2437-56-1
((CH <sub>3</sub> ) <sub>3</sub> C) <sub>2</sub> C = CHCH(C	(8.31±0.01)	(136)	(569)	<b>-</b> 56	-233	*EST	50787-12-7

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number				
C <sub>13</sub> H <sub>26</sub> N <sup>+</sup>	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	·····									
(CH3)3C \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	H+ From proton affin PA = 234.3 kcal/r	56 sity of 2,6 nol, 980.	233 -di-tert-butylpip kJ/mol.	eridine (RN	29939-31-9).						
(HN) H+	From proton affin PA = 214.3 kcal/n			o[4.4.4]tetrad	ecane.						
C <sub>13</sub> H <sub>30</sub> N <sub>4</sub> +					· · · · · · · · · · · · · · · · · · ·						
H <sub>3</sub> C N N CH <sub>3</sub>	(≤8.0) IP from 83BAK/A	(≤185) RM.	(≤775)	1	3	*EST					
C <sub>14</sub> F <sub>10</sub> + F F F	F (8.28±0.05) F	(-165)	(-691)	-356	<b>~</b> 1490	•EST	1580-19-4				
F F F	(8.75±0.05)	(-160)	(-669)	-362	-1513	*EST	1580-20-7				
C <sub>14</sub> H <sub>8</sub> +	(7.91) IP from 81GLE/SC	(324) PH.	(1357)	142	594	*EST	67665-34-3				
	(7.88) IP from 81GLE/SC	(330) H, 84GL	(1381) E/SCH.	148	621	*EST	18067-44-2				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>14</sub> H <sub>8</sub> O <sub>2</sub> +	9.25±0.03	190	797	−22.8±1.6	-95.2±6.6	77PED/RYL	84-65-1			
	(8.64±0.03)	(166±1)	(695±5)	−33±1	−139±5	77PED/RYL	84-11-7			
C <sub>14</sub> H <sub>9</sub> Br <sup>+</sup>	(7.58) IP from 83KLA/K	(236) OV, 82LEV	(986) V/LIA.	61	255	*EST	1564-64-3			
C <sub>14</sub> H <sub>9</sub> C <sub>1</sub> +	(7.45±0.03) IP from 82LEV/L	(221) IA, 83KLA	(924) /KOV.	49	205	*EST	716-53-0			
C <sub>14</sub> H <sub>9</sub> F <sup>+</sup>	(7.46) IP from 83KLA/K	(179) OV, 82LEV	(751) V/LIA.	7	31	*EST	529-85-1			
C <sub>14</sub> H <sub>9</sub> NO <sub>2</sub> <sup>+</sup>	7.87±0.01 IP from 82LEV/L	(233) IA, 83KLA	(974) /KOV.	51	215	*EST	602-60-8			
C <sub>14</sub> H <sub>10</sub> +	7.90±0.02 See also: 81ELB/L	278 JE.	1165	96±1	403±4	82CHI/LIE	501-65-5			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	(Ion) ol kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>14</sub> H <sub>10</sub> +										
	7.45±0.03  See also: 83KLA/lequilibrium consta					79KUD/KUD4	120-12-7			
	7.86±0.02 Value of IP from ( (80MAU, re-evalu			49±0.2 m constant de	207±1 termination	79KUD/KUD4	85-01-8			
	(7.55) IP from 81GLE/G	(293) IUB.	(1226)	119	498	•EST	40480-63-5			
	(7.71) IP from 81GLE/G	(247) EUB.	(1036)	70	292	*EST	77669-79-5			
C <sub>14</sub> H <sub>10</sub> O <sup>+</sup>	(7.85)	(206)	(862)	25	105	80DEM/WUL	525-06-4			
	(7.45)	(207)	(866)	35±4	147±18	*EST	257-05-6			
	(8.83±0.03)	(211)	(883)	7	31	78KIM/WIN	90-44-8			
C <sub>14</sub> H <sub>10</sub> O <sub>2</sub> +	(8.5) IP is onset of photo	(183) belectron l	(764) band.	−13±0.7	−56±3	77PED/RYL	134-81-6			

Table 1. Positive Ion Table - Continued

			TO TOIL TUDIC	Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
$C_{14}H_{10}O_2^+$							
	(7.28±0.02) IP from 81BOU/I	(153) DAG.	(639)	-15	-63	81BOU/DAG	
	(7.60±0.02) IP from 81BOU/I	(171) DAG.	(716)	<b>-4</b>	-17	81BOU/DAG	
C <sub>14</sub> H <sub>11</sub> +						· ·	······································
	From proton affin 866. kJ/mol.	214 uity of anthr	894 acene (RN 120-1	2-7). PA =	207.0 kcal/mol,		
-H <sub>2</sub>	From proton affin 831. kJ/mol.	216 ity of phena	906 anthrene (RN 85	-01-8). PA •	= 198.7 kcal/mol,		
C <sub>14</sub> H <sub>12</sub> +							·
C=CH <sub>2</sub>	(8.00±0.02)	(243)	(1018)	59±1	246±4	77PED/RYL	530-48-3
C=C×H	(7.80±0.02)	(240)	(1005)	60.3±0.4	252.4±1.6	77PED/RYL	645-49-8
O <sub>H</sub> , c=c, H	7.70±0.03	234	978	56±0.7	235±3	77PED/RYL	103-30-0
H <sub>2</sub> C≈ <sub>CH</sub> CH≥ <sup>CH</sup> 2	(7.72) IP from GLE/SCH		(1054)	74	309	*est	17935-66-9

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued								
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>14</sub> H <sub>12</sub> +				1. This is a 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.					
	(7.55±0.02)	(216)	(903)	42±2	175±8	77SHA/GOL	776-35-2		
	(7.60) IP from 82GLE/G	(265) SUB.	(1107)	89	374	*EST			
C <sub>14</sub> H <sub>12</sub> CINO <sub>3</sub> +				· · · · · · · · · · · · · · · · · · ·					
0 N-cocH <sub>3</sub>	(8.7) IP is onset of phot	(120) soelectron b	(504) and (80RED/FRI	- −80 E).	-335	*EST	4497-72-7		
C <sub>14</sub> H <sub>12</sub> O+									
О С С С С С С С С С С С С С С С С С С С	(9.13±0.05)	(217)	(907)	6.1±1	26±4	*EST			
Сн2 <sup>0</sup>	(8.50) IP is onset of phot	(201) oelectron b	(842) and (78CEN/FRA	5±1 \).	22±5	77PED/RYL	451-40-1		
C <sub>14</sub> H <sub>13</sub> +						<del></del>			
C14I13	From proton affin 887. kJ/mol.	213 ity of (C <sub>6</sub> H <sub>2</sub>	889 <sub>5</sub> ) <sub>2</sub> C=CH <sub>2</sub> (RN :	530-48-3). 1	PA = 211.9 kcal/s	mol,			
C <sub>14</sub> H <sub>13</sub> N <sup>+</sup>									
CH3 N	(7.7) IP is onset of photo	(236) oelectron ba	(988) and.	59	245	*EST	5877-55-4		
O N CH3	(≤8.07)	(≤245)	(≤1024)	59	245	*EST	6906-25-8		

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	•	(Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number			
С <sub>14</sub> H <sub>13</sub> N <sup>+</sup>	8.55 IP from 80GRU/	(261) /SCH.	(1092)	64	268	*EST	74309-54-9			
H <sub>3</sub> C CH <sub>2</sub>	(8.48)	(258)	(1080)	63	262	*EST				
H3C CH5	(8.45)	(257)	(1077)	63	262	*EST				
CH3 O	8.01 IP from 80GRU/	(249) SCH, 80SC	(1040) CH/RAM.	64	267	*EST	77275-11-7			
H <sub>3</sub> C H C N	(≤7.90±0.05)	(≤242)	(≤1012)	60	250	*EST	6892-33-7			
C <sub>C</sub> C <sub>C</sub> H <sub>3</sub>	(≤8.39±0.05)	(≤254)	(≤1063)	60	253	*EST	18150-12-4			
H <sub>3</sub> CO	(8.27)	(225)	(942)	34	144	*EST				
H <sub>3</sub> CO NO	(8.15)	(222)	(930)	34	144	*EST				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>14</sub> H <sub>13</sub> NO <sup>+</sup>	(7.87) IP from 80GRU/S	(217) SCH.	(908)	36	149	*EST	62205-27-0			
13CO N	(≤7.72±0.05)	(≤211)	(≤883)	33	138	*EST	5847-73-4			
C <sub>14</sub> H <sub>13</sub> N <sub>3</sub> O <sub>3</sub> +	(7.8) -NO <sub>2</sub> IP is onset of pho	(229) toelectron I	(959) pand (81MIL/MII	49 .).	206	•EST				
C <sub>14</sub> H <sub>14</sub> +	(8.2) IP is onset of pho	(288) toelectron l	(1203) band.	99	412	*EST	39473-62-6			
CH2-CH2	8.7±0.1	235	982	34.2±0.4	143.0±1.8	77PED/RYL	103-29-7			
CH <sub>3</sub>	(8.05±0.02)	(214)	(895)	28	118	•EST	605-39-0			
H <sub>3</sub> C CH <sub>3</sub>	(7.85±0.02)	(208)	(871)	27	114	*EST	612-75-9			
н <sub>3</sub> сО-Сн <sub>3</sub>	(8.50)	(223)	(934)	27	114	*EST	613-33-2			

Table 1. Positive Ion Table - Continued

1able 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	Ion) l kJ/mol		Neutral) ol kJ/moi	Neutral reference	CAS registry number			
C <sub>14</sub> H <sub>14</sub> +  H <sub>3</sub> C CH <sub>3</sub>	(7.7) IP is onset of pho	(261) toelectron	(1094) band (84AND/	84 CER).	351	•EST	88635-77-2			
C <sub>14</sub> H <sub>14</sub> Hg <sup>+</sup>										
H3C	(7.94) 3 IP is onset of pho	(261) toelectron	(1091) band (81FUR/	78 PIA).	325	*EST	537-64-4			
C <sub>14</sub> H <sub>14</sub> N <sub>2</sub> +			<del></del>							
	(8.35)	(265)	(1109)	72	303	*EST	6574-83-0			
C <sub>14</sub> H <sub>14</sub> N <sub>2</sub> O +	(≤7.88)	(≤221)	(≤923)	39	163	*EST	19020-81-6			
CH3	IP from 81MIL/M	IL.								
CH3 OH	(≤7.88) <sup>3</sup> IP from 81MIL/M	(≤221) IL.	(≤923)	39	163	*EST	17739-97-8			
CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.3) IP is onset of phot	(221) oelectron t	(925) band (81MIL/M	53 IIL).	221	*EST	77046-80-1			
C <sub>14</sub> H <sub>14</sub> N <sub>2</sub> O <sub>2</sub> +										
OH OCH3	(≤7.85) IP from 81MIL/M	(≤192) IL.	(≤802)	11	45	*EST	23375-56-6			
OH OCH	3 (≤7.76) IP from 81MIL/MI	(≤190) IL.	( <b>≤</b> 794)	11	45	*EST	15096-05-6			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(	(Ion) ol kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C <sub>14</sub> H <sub>14</sub> N <sub>2</sub> O <sub>2</sub> +	OCH <sub>3</sub> (7.72) IP from 77NUY/N	(198) 1ES.	(830)	20	85	*EST	501-58-6		
C <sub>14</sub> H <sub>14</sub> N <sub>2</sub> O <sub>3</sub> +	CH <sub>3</sub> (≤8.06) IP from 81MIL/C	(≤202) IL.	(≤844)	16	66	*EST	1562-94-3		
C <sub>14</sub> H <sub>14</sub> O+	(≤7.78)	(≤161)	(≤674)	-18	-77	*EST	5040-51-7		
C <sub>14</sub> H <sub>14</sub> OS +	(8.1) IP is onset of phot	(227) oelectron	(950) band (84GLE	40 /BIS).	169	*EST			
н <sub>3</sub> с	) (≤8.45) IP from 81MOH/J	(≤204) IA.	(≤855)	10	40	*EST			
C <sub>14</sub> H <sub>14</sub> OSi +	(8.0±0.1)	(158)	(661)	-27	-111	*EST	18414-62-5		
O-SICH3	(~7.0) IP from 82TRA/R	( <i>-57</i> ) ED.	(~240)	-104	-435	*EST			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H() kcal/mo		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>14</sub> H <sub>14</sub> O <sub>2</sub> S <sup>+</sup>	(8.66±0.04)	(151)	(634)	-48±0.7	-202±3	77PED/RYL	599-66-6		
C <sub>14</sub> H <sub>14</sub> O <sub>2</sub> S <sub>2</sub> +	H <sub>3</sub> 7.6 IP from 82GIO/B	(161) OC.	(674)	-14	-59	•EST	5335-87-5		
C <sub>14</sub> H <sub>14</sub> S <sup>+</sup>	(8.05±0.02)	(232)	(969)	46±1	192±4	77PED/RYL	538-74-9		
C <sub>14</sub> H <sub>14</sub> SSi +	(7.45) IP is onset of pho	(206) toelectron	(864) band (82TRA/I	35 RED). See also	145 b: 81TRA/RED	*EST	61431-08-1		
С <sub>14</sub> H <sub>14</sub> S <sub>2</sub> + сн <sub>3</sub> —С > сн <sub>3</sub>	7.5  IP is onset of photos	(215)	(901) band (82GIO/E	42 30 <i>C</i> ).	177	*EST	103-19-5		
C <sub>14</sub> H <sub>14</sub> S <sub>2</sub> Si <sup>+</sup>	(8.4) IP is onset of phor	(220)	(919) band (83AND/	26 CAU).	109	*EST	57864-56-9		
C <sub>14</sub> H <sub>14</sub> Se <sup>+</sup> —CH <sub>2</sub> SeCH <sub>2</sub> —	(≤7.96) IP from 81BAK/A	(≤243) .RM.	(≤1015)	59	247	*EST	1842-38-2		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol			eutral) l kJ/mol	Neutral reference	CAS registry number				
C <sub>14</sub> H <sub>14</sub> Si +	(7.4) IP is onset of phot	(178) coelectron b	(743) eand.	7	29	*EST	13688-68-1				
C <sub>14</sub> H <sub>15</sub> +							At 16.77				
(CH2-CH2)	From proton affin H <sup>+</sup> 814. kJ/mol.	205 ity of C <sub>6</sub> H <sub>5</sub>	859 ;CH <sub>2</sub> CH <sub>2</sub> C <sub>6</sub>	H <sub>5</sub> (RN 103-29 -	-7). PA = 194	.6 kcal/mol,					
С <sub>14</sub> H <sub>15</sub> BrO +	(≤8.57) IP from 82PFI/GE -Br	(≤184) BR.	(≤770)	-14	-57	*EST	72036-54-5				
C <sub>14</sub> H <sub>15</sub> ClO <sup>+</sup>	(8.67) IP from 82PFI/GE	(173) P.R.	(724)	-27	-113	*EST	59344-32-0				
C <sub>14</sub> H <sub>15</sub> FO <sup>+</sup>	(8.90) IP from 82PFI/GE	(124) R.	(518)	-82	-341	•EST	72036-55-6				
C <sub>14</sub> H <sub>15</sub> NO <sub>3</sub> +	(≤9.28) IP from 82PFI/GE NO2	(≤193) R.	(≤806)	-21	-89	*EST	29339-45-5				

Table 1. Positive Ion Table - Continued

			VC 1011 TABLE	Contin			
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>14</sub> H <sub>16</sub> <sup>+</sup> H <sub>3</sub> C  CH <sub>3</sub> CH <sub>3</sub>	(≤7.60±0.03)	(≤180)	(≤754)	5±0.7	21±3	*EST	1134-40-3
	(7.95±0.05) IP from 81HEI/K	(241) OV.	(1007)	57	240	*EST	54922-12-2
С <sub>14</sub> H <sub>16</sub> Cr <sup>+</sup> — сн <sub>3</sub> — сн <sub>3</sub>	(≤5.24±0.1) See also: 82CAB/	(≤86) COW.	(≤360)	-35	-146	*EST	12087-58-0
C <sub>14</sub> H <sub>16</sub> O +	(≤8.90) IP from 82PFI/GI	(≤187) 3R.	(≤781)	-19	<b>-78</b>	*EST	36047-17-3
C <sub>14</sub> H <sub>16</sub> Si +	(8.5) IP from 81TRA/R	(209) ED.	(875)	13	55	*EST	778-24-5
C <sub>14</sub> H <sub>17</sub> NO <sup>+</sup>	(≤7.85) IP from 82PFI/GE	(≤163) BR.	(≤683)	-18	-74	*EST	72036-57-8
C <sub>14</sub> H <sub>18</sub> <sup>+</sup>	(7.86) IP from charge tra	(172) insfer equili	(721) brium constant c	−9±0.7 leterminatio	-37±3 ns (80MAU).	77PED/RYL	1079-71-6

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	∆ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number		
C <sub>14</sub> H <sub>18</sub> +	7.89 IP from charge tra	174 ansfer equi	727 librium constant (	−8±2 determinatio	–34±8 ons (80MAU).	77SHA/GOL	5325-97-3		
	(≤8.37) IP from 80GLE/F	(≤246) IOP.	(≤1029)	53	221	*EST			
C <sub>14</sub> H <sub>18</sub> N <sub>2</sub> + N(CH <sub>3</sub> ) <sub>2</sub>	(6.70±0.02)	(200)	(839)	46	193	*EST	10075-69-1		
(H <sub>3</sub> C) <sub>2</sub> N N(CH <sub>3</sub> I <sub>2</sub>	(6.45±0.02)	(212)	(884)	63	262	*EST	20734-58-1		
C <sub>14</sub> H <sub>18</sub> N <sub>4</sub> +  NICH <sub>3</sub> I <sub>2</sub> NICH <sub>3</sub> I <sub>2</sub>	(7.3) IP is onset of pho	(244) toelectron	(1021) band (83DOB/HI	76 L).	317	*EST	85698-56-2		
C <sub>14</sub> H <sub>19</sub> +									
(COC) HT	From proton affir PA = 202.6 kcal/s			roanthracen	e (RN 1079-71-6)				
( <u></u>	From proton affir PA = 204.7 kcal/i			rophenanthi	rene (RN 5325-97	-3).			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol			eutral) l kJ/moi	Neutral reference	CAS registry number
C <sub>14</sub> H <sub>19</sub> N <sub>2</sub> + (H <sub>3</sub> C) <sub>2</sub> N N(CH <sub>3</sub> ) <sub>2</sub>	H + From proton affin PA = 241.8 kcal/r	186 nity of N,N,I nol, 1012. k	780 N',N'-tetrameth J/mol.	yl-1,8-naphti	nalenediamine	(RN 20734-58-1).	
C <sub>14</sub> H <sub>20</sub> +	(≤8.17) IP from 80GLE/H	(≤190) IOP.	(≤795)	2	7	*EST	4685-74-9
	(8.93)	(171.1)	(717.1)	-34.5	-144.5	79CLA/KNO	2292-79-7
C <sub>14</sub> H <sub>20</sub> O <sub>2</sub> +	9.0±0.05 IP from 84OLI/FL	(141) .E.	(589)	-67	-279	*EST	950-21-0
C <sub>14</sub> H <sub>20</sub> O <sub>5</sub> +	(≤8.0) IP from 83BAK/A		(≤80)	-165	-692	•EST	14098-44-3
C <sub>14</sub> H <sub>21</sub> N <sup>+</sup> H <sub>5</sub> C <sub>2</sub> C <sub>2</sub> H <sub>5</sub>	(≤7.60) IP from 82ROZ/H		(≤869)	33	136	*EST	81506-13-0
C <sub>14</sub> H <sub>22</sub> +	(≤8.40) IP from 80GLE/H0		(≤681) o: 85BAI/MIS.	-31±1.4	-129±6	84NES/VER	1571-86-4

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>14</sub> H <sub>22</sub> +  C(CH <sub>3</sub> ) <sub>3</sub> C(CH <sub>3</sub> ) <sub>3</sub>	(≤8.60±0.07)	(≤185)	(≤774)	-13	-56	*EST	1012-76-6		
(CH3)3C C(CH5	3 <sup>3</sup> 3 (8.71±0.07)	(171)	(713)	-30±1.4	−127±6	84NES/VER	1014-60-4		
(СН3)3С	<sup>4</sup> 3 <sup>)</sup> 3 8.24±0.01 IP from 82LEV/L	(161) .IA, 84HO\	(673) W/GON, 86ORI	−29 L/MIS. See als	–122 so: 85BAI/MIS.	85ORL/MIS	1012-72-2		
C <sub>14</sub> H <sub>22</sub> O + OH OH CICH	3 <sup>)</sup> 3 (7.70±0.02) See also: 83CET/	(112) LAP.	(468)	-66	-275	*EST	128-39-2		
(CH3)3C C(CH	(7.90±0.02) 3 <sup>1</sup> 3	(109)	(455)	-73	-307	*EST	1138-52-9		
C <sub>14</sub> H <sub>23</sub> N <sup>+</sup> H <sub>5</sub> C <sub>2</sub> NC <sub>2</sub> H <sub>5</sub> C <sub>2</sub> H <sub>5</sub>	(≤7.77) IP from 82ROZ/F	(≤207) IOU2.	(≤867)	28	117	*EST	81506-16-3		
C <sub>14</sub> H <sub>23</sub> NO +	(≤7.75) IP from 82PFI/GE	(≤116) ER.	(≤486)	-63	-262	*EST	1500-76-1		

Table 1. Positive Ion Table - Continued

			<del></del>				
ION I	onization potential eV	Δ <sub>f</sub> H(Iα kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
			· · · · · · · · · · · · · · · · · · ·				
C <sub>14</sub> H <sub>24</sub> +							
	(8.8) IP is onset of photon	(145)	(606)		-243.2±3.8	77PED/RYL	
<b>~~~</b>	ir is onset of photo	ocicciton	and (0411E#110)	11).			
^^^	(0.0)	44.50\	****	<b>40</b>	400		
	(9.0) IP is onset of photon	(158) toelectron b	(660) and (84HEI/HO	–50 N).	-208	71ALL/WUE	
C T 0 +				<u> </u>			
C <sub>14</sub> H <sub>24</sub> O <sub>4</sub> +							
	(≤9.2) IP from 83BAK/A	(≤39) RM	(≤162)	-174	-726	*EST	
	11 110111 0001 11471						
				<del></del>			
C <sub>14</sub> H <sub>26</sub> +	(0.00, 0.00)	(010)	(010)	10		*P07	505.100
1-C <sub>14</sub> H <sub>26</sub>	(9.89±0.02)	(218)	(913)	-10	-41	*EST	765-10-6
2-C <sub>14</sub> H <sub>26</sub>	(9.26±0.03)	(199)	(833)	-14	-60	*EST	638-60-8
3-C <sub>14</sub> H <sub>26</sub>	(9.17±0.02)	(197)	(826)	-14	-59	*EST	60212-32-0
4-C <sub>14</sub> H <sub>26</sub>	(9.11±0.03)	(196)	(820)	-14	-59	*EST	60212-33-1
5-C <sub>14</sub> H <sub>26</sub>	(9.10±0.03)	(196)	(819)	-14	-59	*EST	60212-34-2
6-C <sub>14</sub> H <sub>26</sub>	(9.09±0.02)	(196)	(818)	-14	-59	*EST	3730-08-3
7-C <sub>14</sub> H <sub>26</sub>	(9.03±0.04)	(194)	(812)	-14	-59	*EST	35216-11-6
C <sub>14</sub> H <sub>26</sub> S <sub>2</sub> Si <sub>2</sub> +							
	(7.0)	(23)	(96)	-138	-579	*EST	69209-20-7
(CH3/351/CH2/S-CH3/3	IP is onset of phot				3		
С. и. +	····	···········		<u>-</u> -			
$C_{14}H_{28}^+$ $((CH_3)_3C)_2C = CHC(CH_3)_3$							
	(8.17±0.01)	(131)	(550)	-57	-238	81HOL/FIN	28923-90-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(lo		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
$C_{14}H_{28}N^{+}$ $\begin{pmatrix} C_{14}H_{28}N^{+} & 60 & 250 \\ N & C_{13}C_{13}C_{14} & 60 & 250 \\ N & C_{14}C_{13}C_{14} & 60 & 250 \\ N & C_{14}C_{14}C_{14} & 60 & 250 \\ N & C_{14}$							
C <sub>14</sub> H <sub>32</sub> N <sub>4</sub> <sup>+</sup> H <sub>3</sub> C N N CH <sub>3</sub> H <sub>3</sub> C N N CH <sub>3</sub>	(≤8.0) IP from 83BAK/A	(≤184) ARM.	(≤770)	-0.5	-2	•EST	
C <sub>15</sub> F <sub>18</sub> +  FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	11.3 IP is onset of pho	(–530) toelectron b	(–2216) pand (84HEI/V	–790 VIR).	-3306	*EST	33021-47-5
C <sub>15</sub> H <sub>9</sub> N <sup>+</sup>	(7.80±0.03) See also: 83KLA/	(267) KOV.	(1114)	87±0.2	362±1	•EST	1210-12-4
С <sub>15</sub> H <sub>10</sub> O <sup>+</sup>	7.69±0.03	(204)	(852)	26.3±2	110±8	•EST	642-31-9
	(8.1) IP is onset of pho	(262) toelectron b	(1099) and.	76±2	318±8	85STE/GAM	886-38-4
C <sub>15</sub> H <sub>12</sub> +	(7.6) IP is onset of pho	(232) toelectron b	(970) and.	57±0.7	237±3	*EST	256-81-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> <i>H</i> (I		$\Delta_{\mathbf{f}}H(\mathbf{N})$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>15</sub> H <sub>12</sub> +	(7.37) IP from charge tr	(215) ansfer equil	(898) ibrium constant (	45 determinatio	187 ons (80MAU).	*EST	613-12-7
CH <sub>3</sub>	7.24±0.03 See also: 80MAU	(215) , 83KLA/K0	(899) OV.	48	201	*EST	779-02-2
СНЗ	7.7±0.03	(217)	(907)	39±2	164±7	*EST	832-69-9
СН3	(7.7)	(217)	(907)	39±2	164±7	*EST	2531-84-2
CH3	(7.68±0.01)	(216)	(905)	39	164	*EST	832-71-3
H <sub>3</sub> C	(7.70±0.02)	(222)	(929)	44±4	186±15	*EST	832-64-4
	(7.45)	(282)	(1180)	110	461	*EST	24168-52-3
©CH <sub>3</sub>	7.46±0.03	(214)	(897)	42±0.2	177±1	*EST	883-20-5

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol	Δ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number						
C <sub>15</sub> H <sub>12</sub> AlF <sub>9</sub> O <sub>6</sub> <sup>+</sup>	(8.7) IP is onset of pho	(–580) (–2428) toelectron band.	781±3	-3267±13	80TEL/RAB	14354-59-7						
C <sub>15</sub> H <sub>12</sub> O <sub>2</sub> +	(8.3) IP is onset of pho	(131) (550) toelectron band.	-60±0.7	−251±3	81FER/RIB	120-46-7						
C <sub>15</sub> H <sub>13</sub> +	H <sup>†</sup> From proton affii 880. kJ/mol.	200 837 nity of 2-methylanthracen	- c (RN 613-12-7)	). PA = 210.3	3 kcal/mol,							
CH3 Lt2	From proton affii 895. kJ/mol.	200 836 nity of 9-methylanthracen	c (RN 779-02-2)	). PA = 213.9	) kcal/mol,							
C <sub>15</sub> H <sub>14</sub> + CH <sub>3</sub>	(≤8.10±0.05)	(≤236) (≤986)	49	204	*EST	833-81-8						
	(8.20)	(249) (1043)	60±0.5	252±2	77PED/RYL	1138-48-3						
	(8.05)	(243) (1016)	57±0.7	239±3	77PED/RYL	1138-47-2						
	(8.0) IP is onset of pho	(351) (1469) toelectron band.	167	697	*EST	73045-27-9						

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number
C <sub>15</sub> H <sub>14</sub> <sup>+</sup>							
	(7.6) IP is onset of pho	(386) toelectron b	(1616) and.	211	883	*EST	73050-58-5
C <sub>15</sub> H <sub>15</sub> La +							
	(7.9±0.3)	(218)	(912)	36±2	150±7	77PED/RYL	1272-23-7
C <sub>15</sub> H <sub>15</sub> N <sup>+</sup>		······································					
NICH <sub>3</sub> 1 <sub>2</sub>	(7.1) IP is onset of pho	(216) toelectron b	(905) and (84GLE/SCI	53 H).	220	*EST	92013-89-3
C <sub>15</sub> H <sub>15</sub> NO <sup>+</sup>							
H3C CV	(≤9.20) IP from 82PFI/GI	(≤226) ER.	(≤946)	14	58	*EST	72036-56-7
C <sub>15</sub> H <sub>15</sub> Pr <sup>+</sup>							
	(7.68±0.1)	(200)	(838)	23±2	97±9	77PED/RYL	11077-59-1
C <sub>15</sub> H <sub>15</sub> Tm +							
	(7.43±0.1)	(186)	(779)	15±1	62±6	77PED/RYL	1272-26-0
C <sub>15</sub> H <sub>15</sub> Yb +						· · · · · · · · · · · · · · · · · · ·	
	(7.5±0.3)	(206)	(862)	33±1	138±6	77PED/RYL	1295-20-1

Table 1. Positive Ion Table - Continued

			ive ion tabl	e - Conti	aucu		
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mo	eutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>15</sub> H <sub>16</sub> N <sub>2</sub> +	(7.50±0.05)	(253)	(1059)	80	335	*EST	63378-86-9
C <sub>15</sub> H <sub>16</sub> OS <sup>+</sup>	(8.15) IP is onset of pho	(213) toelectron	(890) band (84GLE	25 /BIS).	104	•EST	
C <sub>15</sub> H <sub>18</sub> <sup>+</sup> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.1) IP is onset of phot	(219) coelectron	(918) band (84AND	56 /CER).	233	*EST	88635-76-1
	(7.85±0.05) IP from 81HEI/K0	(205) OV.	(857)	24	100	*EST	1206-79-7
C <sub>15</sub> H <sub>18</sub> CrO <sub>3</sub> +  H <sub>3</sub> C Cr(CO) <sub>3</sub> H <sub>3</sub> C CH <sub>3</sub> H <sub>3</sub> C CH <sub>3</sub>	(6.35±0.1)	(10)	(42)	-136±3	-571±13	77PED/RYL	12088-11-8
С <sub>15</sub> H <sub>18</sub> О + 0	IP from 82PFI/GE	(≤172) R.	(≤718)	-26	-111	*EST	72036-52-3
C <sub>15</sub> H <sub>18</sub> OP <sup>+</sup> OH   CH <sub>3</sub> 1,CH   P.	From proton affini PA = 216. kcal/mo	89 ty of i-C <sub>3</sub> I ol, 904. kJ//	373 H <sub>7</sub> (C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> PO mol.	(RN 2959-75-3	3)(86TRA/MU	'N).	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ <sub>f</sub> H( kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>15</sub> H <sub>18</sub> O <sub>2</sub> + O	(≤8.26) IP from 82PFI/G CH <sub>3</sub>	(≤136) ER.	(≤568)	-55	-229	*EST	29339-44-4			
C <sub>15</sub> H <sub>19</sub> +	4 From proton affi PA = 233. kcal/n			ropylazulene (l	RN 489-84-9).	ck:				
$C_{15}H_{20}^{+}$ $C_{15}H_{20}^{+}$ $C_{15}H_{20}^{+}$	(8.29±0.08) IP from 81ELB/I	(230) .IE.	(962)	39	162	*EST	80025-09-8			
C <sub>15</sub> H <sub>21</sub> AlO <sub>6</sub> +  H <sub>3</sub> C  C <sub>15</sub> H <sub>21</sub> AlO <sub>6</sub> +  C <sub>15</sub> C  C	(7.78±0.05) IP from 81WES/I	(-220) REI.	(-919)	-399±1	−1669±4	80TEL/RAB	13963-57-0			
C <sub>15</sub> H <sub>21</sub> CrO <sub>6</sub> + CH <sub>3</sub>	6.95±0.2 IP is onset of pho	(-182) toelectron	(-760) band(81WES/F	342±2 REI).	-1431±7	82PIL/SKI	21679-31-2			
C <sub>15</sub> H <sub>21</sub> FeO <sub>6</sub> <sup>+</sup> H <sub>3</sub> C-C  CH <sub>3</sub>	(7.55) IP is onset of pho	(-123) toelectron	(~515) band. See also:	-297±1 81WES/REI.	-1244±6	77PED/RYL	14024-18-1			
C <sub>15</sub> H <sub>21</sub> MnO <sub>6</sub> <sup>+</sup> H <sub>3</sub> C  C <sub>15</sub> H <sub>21</sub> MnO <sub>6</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	(7.58±0.05) IP from 81WES/I	(−135) REI.	(-564)	-310±1	−1295±6	77PED/RYL	14284-89-0			

Table 1. Positive Ion Table - Continued

	Table	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>15</sub> H <sub>24</sub> +  (CH <sub>3</sub> 1 <sub>2</sub> HC	(8.24) IP from 84HOW/	(158) GON.	(661)	-32	-134	*EST	717-74-8				
C <sub>15</sub> H <sub>24</sub> O +	(≤7.80) IP from 83CET/L	(≤107) .AP.	(≤449)	-73	-304	*EST	128-37-0				
C <sub>16</sub> F <sub>10</sub> <sup>+</sup> F F F F F F F F F F F F F F F F F F F	(8.36±0.05)	(-167)	(~697)	-359	-1504	*EST	1493-68-1				
C <sub>16</sub> F <sub>16</sub> +  F F F F F F F F F F F F F F F F F F F	10.1 IP is onset of phot	(–347) toelectron t	(-1451) pand (84HEI/WI	-580 R).	-2425	*EST	42858-85-5				
C <sub>16</sub> H <sub>8</sub> F <sub>2</sub> O <sub>4</sub> +  F———————————————————————————————————	(8.7) -F IP is onset of phot	(39) toelectron b	(165) pand (85GLE/De	–161 OB).	674	*EST	97245-28-8				
C <sub>16</sub> H <sub>10</sub> + HC	(8.2) IP is onset of phot	(340) coelectron b	(1421) pand (81GLE/SC	151 CH).	630	*EST	18442-29-0				
	7.41 See also: 81CLA/Fequilibrium consta			_		79KUD/KUD2	129-00-0				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>16</sub> H <sub>10</sub> +	(7.95±0.04)	(253)	(1056)	69.2±0.3	289.4±1.1	81KUD/KUD	206-44-0			
C <sub>16</sub> H <sub>10</sub> O <sub>4</sub> +		•								
	(8.5) IP is onset of phot	(130) toelectron b	(544) pand (85GLE/DO	<b>−</b> 66 B).	-276	*EST	19909-44-5			
C <sub>16</sub> H <sub>11</sub> +	From proton affin	211 ity of pyren	884 le (RN 129-00-0).	PA = 206.	1 kcal/mol, 862. k	J/mol.				
H+	From proton affin 834. kJ/mol.	235 ity of fluora	985 anthene (RN 206-	44-0). PA :	= 199.3 kcal/mol,					
C <sub>16</sub> H <sub>12</sub> +										
$\bigcirc -c = c - c$	(7.5) IP is onset of phot	(276) coelectron b	(1154) and (80AND/BIC	103 C).	430	*EST	13343-79-8			
CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>4</sub> CH <sub>5</sub> CH <sub>5</sub> CH <sub>6</sub> CH <sub>7</sub>	(7.48) IP from 84GLE/S0	(311) CH.	(1304)	139	-582	*EST	22360-77-6			
CH <sub>2</sub>	(7.6) IP is onset of phot	(233) oelectron b	(976) and.	58±3	243±12	*EST	3302-51-0			
	(7.7) IP is onset of photo	(253) oelectron b	(1060) and (82HAS/NEU	76 J).	317	*EST				

Table 1. Positive Ion Table - Continued

			- Ton Table	Continued			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>16</sub> H <sub>14</sub> +	7.55	237	993	63	265	69STU/WES	538-81-8
H <sub>3</sub> C O C	<sup>H</sup> 3 7.99±0.04	218	914	34±0.5	143±2	77PED/RYL	1576-69-8
H <sub>3</sub> C CH <sub>3</sub>	7.56±0.1	220	924	46±1	194±6	77PED/RYL	3674-69-9
CH <sub>3</sub>	(8.01±0.05)	(225)	(940)	40±2	167±9	77PED/RYL	604-83-1
	(8.1) IP is onset of photo	(224) pelectron ba	(936) and (82HAS/NE	37 U).	155	*EST	
C <sub>16</sub> H <sub>16</sub> +	(8.2±0.1) IP from 84GRO/C	(247) HE.	(1035)	58	244	84GRO/CHE	20071-09-4
© .CH₃	(7.9) IP from 81KLY/SH		(984)	53	222	*EST	14161-72-9
СНЗ	(7.9) IP from 81KLY/SH		(971)	50	209	*EST	14161-73-0

Table 1. Positive Ion Table - Continued

Table 1. I ositive foil Table — Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Net		Neutral reference	CAS registry number			
C <sub>16</sub> H <sub>16</sub> <sup>+</sup>	7.9 IP is onset of phot	(223) toelectron b	(933) and.	41±2	171±7	77PED/RYL	2319-97-3			
	7.8±0.1 IP from 82LEV/L	239 IA, 82GLE	998 /ECK. See also: 8	59±0.7 1ZHO/KOV	246±3 ⁄.	80NIS/SAK	1633-22-3			
С <sub>16</sub> H <sub>16</sub> BrN <sup>+</sup>	(≤7.04) <sub>Br</sub> IP from 85CAU/F	(≤200) UR.	(≤835)	37	156	*EST	2844-19-1			
C <sub>16</sub> H <sub>16</sub> CIN+	(≤7.05) IP from 85CAU/F	(≤190) FUR.	(≤796)	28	116	•EST	69957-42-2			
С <sub>16</sub> H <sub>16</sub> CrO <sub>4</sub> +	(≤5.77) IP from 82CAB/C	(≤35) :OW.	(≤147)	-98	<b>-410</b>	*EST	1272-35-1			
C <sub>16</sub> H <sub>16</sub> FN+	(6.39) IP is onset of phot	(160) toelectron b	(671) and (85CAU/FU	13 R).	54	•EST	38695-34-0			
C <sub>16</sub> H <sub>16</sub> O +	(8.0) IP is onset of phot	(217) coelectron b	(909) and.	33±3	137±12	77PED/RYL	25401-39-2			

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Tabl	e - Continued		
ION Neutral	Ionization potential eV	$\Delta_f H( ext{Ion})$ kcal/mol kJ/mol	Δ <sub>f</sub> H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C <sub>16</sub> H <sub>16</sub> U <sup>+</sup>	≤6.17±0.03	(≤247) (≤1035)	105±3 439±13	77TEL/RAB	11079-26-8
C <sub>16</sub> H <sub>17</sub> +  CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	From proton affir 901. kJ/mol.	193 809 nity of (4-CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> ) <sub>2</sub> C=	CH <sub>2</sub> (RN 2919-20-2). PA =	215.4 kcal/mol,	
C <sub>16</sub> H <sub>18</sub> N <sub>2</sub> O <sub>3</sub> + c <sub>2</sub> +50-\(\infty\)-\(\i	(7.2) IP is onset of photo	(166) (695) toelectron band (81MIL/	0 0 CIL).	*EST	4792-83-0
C <sub>16</sub> H <sub>19</sub> +	H+ From proton affin 820. kJ/mol.	194 810 ity of C <sub>6</sub> H <sub>5</sub> (CH <sub>2</sub> ) <sub>4</sub> C <sub>6</sub> H <sub>5</sub>	(RN 1083-56-3). PA = 195.9	kcal/mol,	
С16H <sub>20</sub> Cr <sup>+</sup> сн,	(≤5.21) IP from 82CAB/C	(≤105) (≤439) OW.	-15 -64	*EST	12092-21-6
С <sub>16</sub> H <sub>20</sub> OP <sup>+</sup>	From proton affini PA = 216 kcal/mo	83 347 ity of t-C <sub>4</sub> H <sub>9</sub> (C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> PO I, 904 kJ/mol.	(RN 56598-35-7) (86TRA/MI	JN).	
C <sub>16</sub> H <sub>28</sub> +	(9.1) IP is onset of photo	(173) (726) Delectron band (84GLE/S	−36±3 −152±13 SPA).	77PED/RYL	283-68-1

Table 1. Positive Ion Table - Continued

	Tubic	1. 1 0310	ive ion labit	e - Contin	<u> </u>		
ION Neutral	Ionization potential	∆ <sub>f</sub> H( kcal/mo	(Ion) bl kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>16</sub> H <sub>32</sub> N <sub>2</sub> O <sub>5</sub> +	(≤7.7) IP from 83BAK/4	(≤7) ARM.	(≤31)	-170	-712	*EST	31364-42-8
C <sub>16</sub> H <sub>34</sub> N <sub>2</sub> + (E)-((CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> C(CH <sub>3</sub>	s) <sub>2</sub> ) <sub>2</sub> N <sub>2</sub> (≤8.00)	(≤137)	(≤575)	-47±2	-197±9	80ENG	55204-43-8
C <sub>16</sub> H <sub>36</sub> Sn <sup>+</sup> (C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> Sn	(8.0) IP is onset of pho	(132) otoelectron	(553) a band.	-52±1	−219±4	77PED/RYL	1461-25-2
(iso-C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> Sn	(≤8.68)	(≤165)	(≤689)	-35	-148	*EST	3531-43-9
C <sub>16</sub> H <sub>44</sub> Si <sub>4</sub> Ti <sup>+</sup> [(CH <sub>3</sub> ) <sub>3</sub> SiCH <sub>2</sub> ] <sub>4</sub> Ti	(8.0) IP is onset of pho	(-3) otoelectron	(-14) a band.	-188±8	-786±33	86SIM/BEA	33948-28-6
C <sub>16</sub> H <sub>44</sub> Si <sub>4</sub> Zr <sup>+</sup> ((CH <sub>3</sub> ) <sub>3</sub> SiCH <sub>2</sub> ) <sub>4</sub> Zr	(8.2) IP is onset of pho	(-9) otoelectron	(-36) a band.	-198±8	-827±33	86SIM/BEA	32665-18-2
C <sub>17</sub> H <sub>12</sub> +	(7.53) IP from 84GLE/S	(349) SCH.	(1458)	(175)	(732)	•EST	32137-40-9
C <sub>17</sub> H <sub>16</sub> N <sub>2</sub> +	N (≤7.31) IP from 85CAU/	(≤261) FUR.	(≤1094)	93	389	*EST	
C <sub>17</sub> H <sub>18</sub> +	(7.6) IP is onset of pho	(226) otoelectron	(947) a band (81ZHO)	51 /KOV).	214	*EST	24262-07-5

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	∆ <sub>f</sub> H() kcal/mo	ion) I kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry					
C <sub>17</sub> H <sub>19</sub> NO +			· · · · · · · · · · · · · · · · · · ·	****								
(CH3/5/N———————————————————————————————————	(6.16) IP is onset of photon	(166) coelectron	(696) band (85CAU/FU	24 JR).	102	*EST	2844-24-8					
C <sub>17</sub> H <sub>20</sub> N <sub>2</sub> +				<del></del>								
NICH <sub>3</sub> ) <sub>2</sub> NICH <sub>3</sub> ) <sub>2</sub>	(6.7) IP is onset of phot	(226) oelectron	(945) band (84GLE/SC	71 PH).	299	*EST	86943-85-3					
C <sub>17</sub> H <sub>26</sub> O +			-									
$(CH_3)_2HC$ $CH(CH_3)_2$ $CH(CH_3)_2$	(8.0) IP is onset of phot	(104) oelectron	(437) band (78CEN/FR	-80 A).	-335	*EST	2234-14-2					
C <sub>17</sub> H <sub>29</sub> N <sup>+</sup>					<del></del>							
(H3C)3C N C(CH3)3	8.20 IP is onset of phot	(133) oelectron	(558) band.	<b>-</b> 56	-233	*EST	20336-15-6					
C <sub>18</sub> H <sub>12</sub> +					· · · · · · · · · · · · · · · · · · ·							
000	7.43±0.03 See also: 81AKI/H	239 AR.	1001	68±0.2	284±1	79KUD/KUD2	56-55-3					
	T.(0	245			-0.							
	7.60	245	1024	70±0.2	291±1	79KUD/KUD2	195-19-7					
	7.59±0.02 Value of IP from c (80MAU) is in agr					79KUD/KUD2	218-01-9					
	(				,							
	6.97±0.02 See also: 84STA/M	229 AQ, 80SH	956 IU/BOY.	68±0.2	284±1	79KUD/KUD2	92-24-0					

Table 1. Positive Ion Table - Continued

	Table	. Positiv	e ion Table -	Continu	1ea		
ION Neutral	Ionization potential	∆ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Neu kcal/mol		Neutral reference	CAS registry number
C <sub>18</sub> H <sub>12</sub> +	7.84±0.01 Value of IP from c (80MAU) is in agr				270±1 erminations	79KUD/KUD2	217-59-4
C <sub>18</sub> H <sub>13</sub> +							
	From proton affin 911. kJ/mol.	216 ity of napht	903 thacene (RN 92-24	-0). PA =	217.8 kcal/mol,		
(OO) H	From proton affin 843. kJ/mol.	227 ity of chryso	950 ene (RN 218-01-9)	. PA = 201	1.6 kcal/mol,		
H <sup>+</sup>	From proton affin 830.5 kJ/mol.	232 ity of triphe	970 enylene (RN 217-5	9-4). PA =	198.5 kcal/mol,		
C <sub>18</sub> H <sub>14</sub> +		<u>-</u>					
	(7.50) IP from 84GLE/S0	(343) CH.	(1434)	170	710	*EST	32137-39-6
	(≤7.96)	(≤280)	(≤1170)	96±4 ·	- 402±15	77PED/RYL	2175-90-8
	8.0 IP is onset of photo	(252) pelectron b	(1054) and (83KOB, 82L	68 EV/LIA).	283	*EST	84-15-1
	8.01±0.01 IP from 82LEV/LI	(252) (A. See also	(1056) b: 83KOB.	68	283	*EST	92-06-8

Table 1. Positive Ion Table - Continued

Ionization potential eV 7.78±0.01	Δ <sub>f</sub> H(1 kcal/mol	l kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
7.78±0.01	(247)		. • •			
		(1034)	68	283	*EST	92-94-4
(≤8.8) IP from 85GLE/I	(≤121) 0OB.	(≤507)	-82	-342	•EST	19909-64-9
7.32±0.05	266	1114	98±3	408±11	79STE	603-32-7
(8.60±0.03)	(229)	(960)	31±2	130±8	77PED/RYL	960-71-4
7.45±0.05	317	1328	146±2	609±10	79STE	603-33-8
6.80±0.04	176	734	19±0.2	78±1	78STE	603-34-9
7.39±0.03 IP from 82IKU/KE	249 BB, 77ROS	1041 I/DRA, 82LEV/L	78±5 IA.	328±21	79STE	603-35-0
	7.32±0.05  7.45±0.05  6.80±0.04	7.32±0.05 266  (8.60±0.03) (229)  7.45±0.05 317  6.80±0.04 176	7.32±0.05 266 1114  (8.60±0.03) (229) (960)  7.45±0.05 317 1328  6.80±0.04 176 734	7.32±0.05 266 1114 98±3  (8.60±0.03) (229) (960) 31±2  7.45±0.05 317 1328 146±2  6.80±0.04 176 734 19±0.2	7.32±0.05 266 1114 98±3 408±11  (8.60±0.03) (229) (960) 31±2 130±8  7.45±0.05 317 1328 146±2 609±10  6.80±0.04 176 734 19±0.2 78±1	7.32±0.05 266 1114 98±3 408±11 79STE  (8.60±0.03) (229) (960) 31±2 130±8 77PED/RYL  7.45±0.05 317 1328 146±2 609±10 79STE  6.80±0.04 176 734 19±0.2 78±1 78STE

Table 1. Positive Ion Table - Continued

Table 1. Fusitive for Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>18</sub> H <sub>15</sub> Sb <sup>+</sup>	7.26±0.05	271	1135	104±4	435±19	79STE	603-36-1		
C <sub>18</sub> H <sub>16</sub> +	(7.4) IP is onset of pho	(275) toelectron b	(1152) pand (82GLE/E	105 3CK).	438	*EST			
C <sub>18</sub> H <sub>16</sub> As +						***			
( O As O ) H	From proton affir 904. kJ/mol.	247 hity of (C <sub>6</sub> H	1034 ( <sub>5</sub> ) <sub>3</sub> As (RN 603	-32-7)(86TRA	/MUN). PA	= 216. kcal/mol,			
C <sub>18</sub> H <sub>16</sub> AsO +	From proton affir 904. kJ/mol.	198 uity of (C <sub>6</sub> H	827 <sub>5</sub> ) <sub>3</sub> AsO (RN 1	153-05-5) (86T	RA/MUN).	PA = 216. kcal/mol	·		
C <sub>18</sub> H <sub>16</sub> N <sup>+</sup>	From proton affin PA = 216. kcal/m			34-9)(86TRA/	MUN).				
C <sub>18</sub> H <sub>16</sub> OP+									
OH !	From proton affin 904. kJ/mol.	154 ity of (C <sub>6</sub> H	644 <sub>5</sub> ) <sub>3</sub> PO (RN 791	1-28-6)(86TRA	VMUN). PA	= 216. kcal/mol,			
C <sub>18</sub> H <sub>16</sub> P <sup>+</sup>	From proton affin	214 ity of (C <sub>6</sub> H	896 <sub>5</sub> ) <sub>3</sub> P (RN 603-3	35-0). PA = (	230) kcal/mol	, (962) kJ/mol.			

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>18</sub> H <sub>16</sub> PS+	From proton affin 904. kJ/mol.	206 ity of (C <sub>6</sub> H	860 5 <sub>5</sub> ) <sub>3</sub> PS (RN 3878	:-45-3)(86TR	A/MUN). PA =	216. kcal/mol,					
C <sub>18</sub> H <sub>16</sub> Sb <sup>+</sup>		······································			· · · · · · · · · · · · · · · · · · ·						
	From proton affin 846. kJ/mol.	267 ity of (C <sub>6</sub> H	1119 5 <sub>5</sub> ) <sub>3</sub> Sb (RN 603-	36-1)(86TRA	/MUN). PA = :	202. kcal/mol,					
C <sub>18</sub> H <sub>16</sub> Si +	(8.4) IP is onset of phot	(257) oelectron b	(1075) and.	63	265	•EST	789-25-3				
C <sub>18</sub> H <sub>18</sub> +	(6.60) IP from 82BAU/B	(276) UN.	(1156)	124±5	519±20	74OTH/BUN	2040-73-5				
CICH3)3	(7.13) IP from 78KLA/K	(201) OV, 83KL	(843) A/KOV.	37	156	*EST	62337-65-9				
C(CH <sup>3</sup> ) <sup>3</sup>	7.13 IP from 83KLA/K	(201) OV.	(843)	37	155	*EST	13719-97-6				
H <sub>3</sub> C CH <sub>3</sub> CH	<sup>4</sup> 3 (7.8±0.1)	(210)	(879)	30±1	126±6	77PED/RYL	7396-38-5				
H <sub>3</sub> C CH <sub>3</sub> CH <sub>3</sub>	(7.5±0.1)	(211)	(881)	38±1	157±6	77PED/RYL	7343-06-8				

Table 1. Positive Ion Table - Continued

	Table	1. Positive ion labi	c - Conti			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ion) kcal/mol kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry number
C <sub>18</sub> H <sub>18</sub> +	(7.3) IP is onset of pho	(221) (926) Stoelectron band (84ZHO	53 /HEI).	222	*EST	
20	7.8 IP is onset of pho	(222) (931) otoelectron band.	43	178	*EST	
	7.8	(236) (987)	56	234	*EST	58002-98-5
	7.4 IP is onset of pho	(212) (886) stoelectron band.	41	172	*EST	27165-88-4
C <sub>18</sub> H <sub>18</sub> N <sub>2</sub> +	(7.4) IP is onset of pho	(275) (1150) otoelectron band (81ZHO	104 /HEI).	436	*EST	
	(7.6) IP is onset of pho	(279) (1169) otoelectron band (81ZHO	104 /HEI).	436	*EST	
C <sub>18</sub> H <sub>20</sub> +	(≤7.85±0.05) IP from 81ZHO/I	(≤225) (≤939) KOV.	43	182	*EST	
	(7.4) IP is onset of pho	(214) (897) stoelectron band (81ZHO	44 /KOV).	183	*EST	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry			
C <sub>18</sub> H <sub>20</sub> +	(≤7.85±0.05) IP from 81ZHO/I	(≤225) ⟨OV.	(≤939)	43	182	•EST				
	(8.12±0.08) IP from 81ELB/L	(240) IE.	(1002)	52	219	•EST				
C <sub>18</sub> H <sub>20</sub> U <sup>+</sup>	(≤6.08) IP from 83GRE/P	(≤229) AY.	(≤959)	89	373	*EST	41367-67-3			
C <sub>18</sub> H <sub>22</sub> N <sub>2</sub> O <sub>3</sub> +	(≤7.64) IP from 81MIL/C	(≤167) IL.	(≤697)	-10	-40	*EST	23315-55-1			
C <sub>18</sub> H <sub>24</sub> +	(7.70±0.05) IP from 81HEI/K0	(175) OV.	(732)	<b>-</b> 3	-11	*EST	1610-39-5			
C <sub>18</sub> H <sub>24</sub> Cr +	(≤5.04) IP from 82CAB/C	(≤134) OW.	(≤562)	18	76	*EST	57820-96-9			
H3C CH3  H3C CH3	4.97 IP from 82CAB/C	130 OW.	543	15±3	64±12	82PIL/SKI	1274-07-3			

Table 1. Positive Ion Table - Continued

ION	Indication patential	A 77/7-		A FEAT			
Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
С <sub>18</sub> H <sub>29</sub> Br +	8.0 IP is onset of pho	(151) toelectron b	(631) and (83CET/LA		-140	*EST	3975-77-7
C <sub>18</sub> H <sub>29</sub> I + I C(CH <sub>3</sub> ) <sub>3</sub> C C(CH <sub>3</sub> ) <sub>3</sub>	3 7.5 IP is onset of pho		(651) and (83CET/LA		-73	•EST	31039-82-4
C <sub>18</sub> H <sub>29</sub> NO + NO C(CH <sub>3</sub> ) <sub>3</sub> C C(CH <sub>3</sub> ) <sub>3</sub>	3 (≤8.69) IP from 83CET/L	(≤184) AP.	(≤768)	-17	<b>-7</b> 0	*EST	24973-59-9
C <sub>18</sub> H <sub>29</sub> NO <sub>2</sub> + NO <sub>2</sub> (CH <sub>3</sub> ) <sub>3</sub> C C(CH <sub>3</sub> ) <sub>3</sub>	3 (≤8.78) IP from 83CET/L		(≤646)	-48	-201	*EST	3463-37-4
С18Н30+	(≤8.60±0.07)	(≤164)	(≤687)	−34±1.4		67ARN/SAN	1459-11-6
(CH <sub>3</sub> ) <sub>3</sub> C C(CH <sub>3</sub> ) <sub>3</sub>	(8.19) IP from 84HOW/0 3 <sup>)</sup> 3		(548) so: 83CET/LAP.	-58±1	-242±4	77PED/RYL	1460-02-2
C <sub>18</sub> H <sub>30</sub> O + OH CICH <sub>3</sub> ) <sub>3</sub> C CICH <sub>3</sub> ) <sub>3</sub>	(7.5) IP is onset of photo		(335) nd (83CET/LAF		-389	*EST	732-26-3

Table 1. Positive Ion Table - Continued

	Table .	1. 1 031111	e ion lable -	Contin	ueu		·
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>18</sub> H <sub>31</sub> N + NH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub> C C(CH <sub>3</sub> ) <sub>3</sub>	(6.9) IP is onset of photon	(110) toelectron t	(460) pand (83CET/LA	-49 P).	-206	*EST	
C <sub>18</sub> H <sub>36</sub> N <sub>2</sub> O <sub>6</sub> +	(≤7.8) IP from 83BAK/A		(≤-118) -	-208	871	*EST	23978-09-8
C <sub>18</sub> H <sub>42</sub> N <sub>3</sub> P + P(N(n-C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> ) <sub>3</sub>	(≤7.05) IP from 82WOR/I	(≤78) HAR.	(≤325)	-85	-355	•EST	5848-64-6
C <sub>19</sub> H <sub>14</sub> <sup>+</sup> CH <sub>3</sub>	(7.46±0.03) IP from 81SHA/A	(226) KI.	(944)	54	224	*EST	3351-28-8
00° cH	3 (7.49±0.03) IP from 81SHA/A	(226) KI.	(947)	54	224	*EST	3351-32-4
OO CH	(7.46±0.03) 3 IP from 81SHA/A	(226) KI.	(944)	54	224	*EST	3351-31-3
OO CH <sub>3</sub>	(7.44±0.03) IP from 81SHA/A	(230) KI.	(963)	59	245	*EST	3351-30-2
OO CH3	(7.40±0.03) IP from 81SHA/A	(229) KI.	(959)	59	245	*EST	3697-24-3

Table 1. Positive Ion Table - Continued

	Table 1. 1 ositive fon Table Continued							
ION Neutral		∆ <sub>f</sub> H(Ion) al/mol kJ/mol	∆ <sub>f</sub> H(Nekcal/mol		Neutral reference	CAS registry number		
С19H14 <sup>+</sup>	(7.44±0.03) (22) IP from 81SHA/AKI.	8) (953)	57	236	*EST	1705-85-7		
© CH <sub>3</sub>	(7.30) (22: IP from 81AKI/HAR.	4) (938)	56	234	*EST	2498-76-2		
000	<sup>1</sup> 3 (7.29) (22 <sup>,</sup> IP from 81AKI/HAR.	4) (937)	56	234	•EST	2498-75-1		
000 cH	(7.30) (22/ 3 IP from 81AKI/HAR.	4) (938)	56	234	*EST	316-49-4		
OOO CH3	(7.33) (22: IP from 81AKI/HAR.	5) (941)	56	234	*EST	316-14-3		
CH <sub>3</sub>	(7.24) (22: IP from 81AKI/HAR.	3) (933)	56	234	*EST	2541-69-7		
QQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQ	(7.33) (225 IP from 81AKI/HAR.	5) (941)	56	234	•est	2381-31-9		
H3C 000	(7.31) (224 IP from 81AKI/HAR.	<b>(939)</b>	56	234	•EST	2381-16-0		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(N kcal/mo	eutral) l kJ/mol	Neutral reference	CAS registry				
С <sub>19</sub> Н <sub>14</sub> +	(7.30) IP from 81AKI/H.	(224) AR.	(938)	56	234	*EST	2381-15-9				
CH3 (CH3)	(7.30) IP from 81AKI/H.	(224) AR.	(938)	56	234	*EST	6111-78-0				
CH3 (O)	(7.27) IP from 81AKI/H <i>I</i>	(243) AR.	(1015)	75	314	*EST	2422-79-9				
C <sub>19</sub> H <sub>16</sub> <sup>+</sup>	(7.48) IP from 84GLE/S0	(337) CH.	(1411)	165	690	*EST	87842-94-2				
CH—C	8.34±0.03	257	1076	65±1	271±4	77PED/RYL	519-73-3				
C <sub>19</sub> H <sub>22</sub> +	(7.3) IP is onset of photo	(207) pelectron b	(867) and (81ZHO/I	39 KOV).	163	*EST					
C <sub>20</sub> F <sub>24</sub> <sup>+</sup>	10.75 IP is onset of photo		(-3183) and (84HEI/W	–1009 /IR).	-4220	*EST	32936-99-5				

Table 1. Positive Ion Table - Continued

<del>y</del>	Table .	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H() kcal/mo	ion) l kJ/mol	Δ <sub>f</sub> H(N kcal/mo	leutral) l kJ/mol	Neutral reference	CAS registry number				
C <sub>20</sub> H <sub>12</sub> +	7.12±0.01	233	976	69	289	77STE/GOL	50-32-8				
	7.41 IP from 79CLA/S	(233) CH.	(976)	62	261	77STE/GOL	192-97-2				
	6.90±0.01	233	974	74±1	308±4	77PED/RYL	198-55-0				
000	6.84 IP from 81SAT/SI	(270) EK.	(1129)	112	469	*EST	4670-86-4				
0000	(6.58)	(269)	(1126)	117	491	*EST	54100-60-6				
	(6.76)	(273)	(1143)	117	491	*EST	6580-41-2				
C <sub>20</sub> H <sub>12</sub> Br <sub>2</sub> <sup>+</sup> Br	(8.1) IP from 83MAR/N	(265) AAY.	(1107)	78	326	*EST					
C <sub>20</sub> H <sub>13</sub> <sup>+</sup>	From proton affin	228 ity of peryl	954 ene (RN 198-55	i-0). PA = 2	11.4 kcal/mol, 8	84. kJ/mol.					

Table 1. Positive Ion Table - Continued

	Table 1. Positive for Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(l kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>20</sub> H <sub>13</sub> Br <sup>+</sup>	(7.9) IP is onset of pho	(260) toelectron	(1086) band (83MAR/M	77 (AY).	324	*EST				
C <sub>20</sub> H <sub>14</sub> +	(7.8) IP is onset of pho	(257) toelectron	(1074) band (83MAR/M	77±3 AY, 82HAS	322±13 /NEU).	77PED/RYL				
C <sub>20</sub> H <sub>14</sub> N <sub>4</sub> +	6.6 IP from 80DUP/F	-86.4 ROB.	-361.5	−238.6±0.4	↓-998.3±1.7	70LON/FIN	101-60-0			
C <sub>20</sub> H <sub>14</sub> O <sub>2</sub> +	(7.08±0.02) IP from 81BOU/I	(172) DAG.	(721)	9	38	81BOU/DAG	75694-46-1			
C <sub>20</sub> H <sub>16</sub> +	(7.9) IP is onset of phot	(354) coelectron l	(1481) band (81GLE/SC	172 H).	719	•est				
H <sub>3</sub> C OOO CH <sub>3</sub>	3 (7.20) IP from 81AKI/H	(210) AR.	(878)	43.9±0.9	183.7±3.9	77PED/RYL	316-51-8			
CH3 CH	3 (7.18) IP from 81AKI/HA	(232) AR.	(971)	66	278	•EST	35187-19-0			
CH <sub>3</sub>	(7.10) IP from 81AKI/HA	(230) AR.	(963)	66.4±1.0	277.7±4.4	77PED/RYL	57-97-6			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>20</sub> H <sub>16</sub> CIN <sub>2</sub> O <sub>3</sub> + H <sub>2</sub> N O O NH <sub>2</sub>	(7.80±0.05) IP from 81TIM/K	(157) OR.	(656)	-23	-97	*EST				
C <sub>20</sub> H <sub>18</sub> <sup>+</sup>	(7.4) IP is onset of pho	(244) toelectron	(1020) band.	73	306	*EST	4432-72-8			
C <sub>20</sub> H <sub>20</sub> +	(7.6) IP is onset of pho	(233)	(975) band.	58	242	*EST				
	(7.4) IP is onset of photo	(226) coelectron	(944) band.	55	230	*EST				
	(7.35) IP is onset of phot	(237) coelectron l	(993) pand (81ZHC	68 )/HEI).	284	*EST				
C <sub>20</sub> H <sub>20</sub> NP <sup>+</sup>	(≤7.43)	(≤216)	(≤903)	44±2	186±9	77PED/RYL	47182-04-7			
C <sub>20</sub> H <sub>20</sub> O + O	(≤8.88) IP from 82PFI/GE	(≤186) ER.	(≤778)	-19	-79	*EST	72036-53-4			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(			leutral)	Neutral	CAS registry
	cV	kcai/mc	ol kJ/mol	kcal/mo	l kJ/mol	reference	number
C <sub>20</sub> H <sub>20</sub> U <sup>+</sup>	(≤6.02) IP from 83GRE/I	(≤300) °AY.	(≤1256)	161	675	*EST	70377-87-6
C <sub>20</sub> H <sub>24</sub> +							
	(7.2) IP is onset of pho	(200) toelectron	(838) band (81ZHO,	34 /KOV). -	144	*EST	
,) °	Fre our						
	(≤7.55±0.05) IP from 81ZHO/I	(≤209) KOV.	(≤872)	34	144	*EST	
	≤7.60±0.05 IP from 81ZHO/I	(≤210) KOV.	(≤877)	34	144	*EST	
C <sub>20</sub> H <sub>24</sub> O <sub>6</sub> +		· · · · · · · · · · · · · · · · · · ·					
	(7.5) IP is onset of pho	(1.8) toelectron	(7.6) band (83BAK/	<b>-171</b> ARM).	-716	*EST	
C <sub>20</sub> H <sub>24</sub> U <sup>+</sup> C <sub>215</sub>	(5.9) IP is onset of pho	(215) toelectron	(900) band (83GRE/	79 PAY).	331	*EST	37274-10-5
C <sub>20</sub> H <sub>26</sub> N <sub>2</sub> O <sub>3</sub> +							
Halichard O	(≤7.61) IP from 81MIL/C: - <sup>O(CH</sup> 2)3 <sup>CH</sup> 3	(≤156) IL.	(≤654)	-19	-80	*EST	17051-01-3

Table 1	Positive	Ion Table	- Continue	a

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ior kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>20</sub> H <sub>28</sub> Cr + CH <sub>3</sub> -CH C <sub>C</sub>	<sup>t3</sup> (≤5.23) IP from 82CAB/0		(≤538)	8	33	*EST	51951-64-5				
CH <sub>3</sub>	(≤4.85) IP from 82CAB/0		<b>(≤454)</b>	-3	-14	*EST	57820-98-1				
C20H30Cl2Zr+  CHICH312  CHICH312  CHICH312  CI  CCI  CCI  CCI  CCI  CCI  CCI  CC	7.1 IP is onset of pho		` '	103±1	-433±4	82PIL/SKI	54039-38-2				
S <sub>20</sub> H <sub>30</sub> S <sub>2</sub> +	(7.5) IP is onset of pho		•	<del>-4</del> 8	-200	*EST	34895-45-9				
20H36 + (сн <sub>3</sub> ) <sub>3</sub> с ссн <sub>3</sub> ) <sub>3</sub>	(5.9) IP is onset of pho		•	90±5.5	377±23	•EST	66809-05-0				
(CH3)3C (CH3)3	(7.1) IP is onset of pho		• •	93±5.5	<del>3</del> 91±23	*EST	66809-06-1				
C <sub>20</sub> H <sub>36</sub> O <sub>6</sub> +	(8.6) IP is onset of photo		•	-258	-1078	*EST	16069-36-6				
C <sub>20</sub> H <sub>44</sub> Hf <sup>+</sup> ((CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> ) <sub>4</sub> Hf	(8.1) IP is onset of phot			-54±9	-228±33	86SIM/BEA	50654-35-8				

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(N- kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>20</sub> H <sub>44</sub> Ti <sup>+</sup> ((CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> ) <sub>4</sub> Ti	(7.7) IP is onset of pho	(140)	(586) band.	-38±8	-157±33	86SIM/BEA	36945-13-8			
C <sub>21</sub> H <sub>18</sub> +	(7.7) IP is onset of phot	(345) toelectron	(1442) band (81GLE/S0	167 CH).	699	*EST				
CH3 CH2	3 (7.06±0.03) IP from 81AKI/H.	(217) AR.	(909)	54 -	228	*EST	35187-24-7			
C <sub>21</sub> H <sub>26</sub> <sup>+</sup>	(≤7.55±0.05) IP from 81ZHO/k	(≤199) COV.	(≤831)	25	103	*EST				
С <sub>21</sub> H <sub>36</sub> + (Сн <sub>3</sub> ) <sub>3</sub> Сн <sub>2</sub> С — Сн <sub>2</sub> СССн <sub>3</sub> )	(8.17) 3 IP from 84HOW/0	(111) GON.	(466)	-77	-322	*EST	21411-39-2			
C <sub>22</sub> H <sub>12</sub> +	7.15 See also: 80MAU.	237	992	72	302	77STE/GOL	191-24-2			
	(6.92±0.04)	(233)	(978)	74	310	77STE/GOL	191-26-4			
C <sub>22</sub> H <sub>12</sub> O <sub>2</sub> +	(8.07±0.05)	(196)	(823)	10±2	44±9	77PED/RYL	3029-32-1			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number				
C <sub>22</sub> H <sub>13</sub> +	From proton affin H <sup>+</sup> 872. kJ/mol.	229 ity of 1,12-t	960 penzoperylene (R	N 191-24-2)	. PA = 208.5 kca	ıl/mol,					
C <sub>22</sub> H <sub>14</sub> +	6.61±0.02 See also: 84STA/N	(237) AAQ.	(992)	85	354	*EST	135-48-8				
0000	7.00 See also: 75CLA/S	(244) SCH.	(1020)	82	345	•EST	226-88-0				
	7.27±0.02 See also: 79CLA/S	(250) SCH.	(1046)	82	345	•EST	222-93-5				
	7.47±0.04 See also: 75CLA/S	(269) SCH.	(1127)	97	406	*EST	188-52-3				
	7.39±0.02 See also: 75CLA/S	251 CH, 79CL	1049 4/SCH.	80	<b>3</b> 36	77STE/GOL	215-58-7				
© PO C	7.38±0.04 See also: 75CLA/S	250 CCH.	1048	80	336	77STE/GOL	53-70-3				
	(7.40±0.02) See also: 75CLA/S	(251) CH.	(1050)	80	336	77STE/GOL	224-41-9				

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Table 1. Positive Ion Table - Continued										
Ionization potential					Neutral reference	CAS registry number				
			78 determinatio	326 ns (80MAU), i	*EST in	213-46-7				
(7.14±0.04)	(245)	(1024)	80	336	*EST	214-17-5				
From proton affin	240 ity of picen	1005 c (RN 213-46-7	). PA = 203.4	kcal/mol, 851.	kJ/mol.					
					·					
(7.35) IP is onset of photon	(256) oelectron b	(1072) and (84ZHO/F	87 IEI).	363	*EST					
		<del></del>				· · · · · · · · · · · · · · · · · · ·				
(≤8.6) <sup>†</sup> 3 IP from 85GLE/D	(≤76) OB.	(≤318)	-122	-512	*EST	19909-65-0				
			·							
(7.0) IP is onset of phot	(176) oelectron b	(737) and (81ZHO/K	15 COV).	62	*EST					
(7.9) IP is onset of phot	(137) oelectron b	(574) and (78CEN/F)	−45±2 RA).	-189±7	82INA/MUR	33574-11-7				
	7.48 IP from charge tra agreement with value (7.14±0.04)  From proton affin (7.35) IP is onset of photon (5.8.6)  (5.8.6)  (7.0) IP is onset of photon (7.0)	Ionization potential eV kcal/mol  7.48 (250) IP from charge transfer equiliagreement with value from 79  (7.14±0.04) (245)  (7.35) (256) IP is onset of photoelectron b  (≤8.6) (≤76) IP from 85GLE/DOB.	Ionization potential Δ <sub>f</sub> H(Ion) eV kcal/mol kJ/mol  7.48 (250) (1048) IP from charge transfer equilibrium constant agreement with value from 79CLA/SCH.  (7.14±0.04) (245) (1024)  240 1005 From proton affinity of picene (RN 213-46-7) H <sup>+</sup> (7.35) (256) (1072) IP is onset of photoelectron band (84ZHO/F-1)  (≤8.6) (≤76) (≤318) From 85GLE/DOB.	Ionization potential of H(Ion) AfH(Ne eV keal/mol kJ/mol kJ/mol keal/mol  7.48 (250) (1048) 78 IP from charge transfer equilibrium constant determination agreement with value from 79CLA/SCH.  (7.14±0.04) (245) (1024) 80  240 1005 From proton affinity of picene (RN 213-46-7). PA = 203.4  (7.35) (256) (1072) 87 IP is onset of photoelectron band (84ZHO/HEI).  (\$8.6) (\$76) (\$318) -122  (\$7.0) (176) (737) 15 IP is onset of photoelectron band (81ZHO/KOV).	Ionization potential   Δ <sub>f</sub> H(Ion)   Δ <sub>f</sub> H(Neutral)   eV   kcal/mol   kJ/mol   kcal/mol   kJ/mol   k	Ionization potential   Δ <sub>t</sub> H(Ion)   Δ <sub>t</sub> H(Neutral)   Neutral reference				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>22</sub> H <sub>30</sub> N <sub>2</sub> O <sub>3</sub> +	C5 <sup>H</sup> 11 (≤7.63) IP from 81MIL/C	(≤147) ∷IL.	(≤616)	-29	-120	•EST	19482-05-4
C <sub>23</sub> H <sub>30</sub> +	(≤7.40±0.05) IP from 81ZHO/I	(≤182) KOV.	(≤763)	12	49	*EST	
C <sub>23</sub> H <sub>30</sub> O + O (CH <sub>2</sub> ) <sub>12</sub>	2 (≤8.15±0.03)	(≤150)	(≤626)	−38±4	-160±15	77PED/RYL	25401-43-8
CH(CH3)2 CH3	(7.6) IP is onset of pho	(125) toelectron b	(523) and (78CEN/F	–50 RA).	-210	*EST	78823-28-6
C <sub>24</sub> H <sub>12</sub> +	7.29 IP at 298 K from 6 See also: 81CLA/		1026 fer equilibria, (	77 7.26 eV (80M.A	323 .U, re-evaluated).	77STE/GOL	191-07-1
C <sub>24</sub> H <sub>13</sub> <sup>+</sup>	From proton affin	238 lity of coron	995 ene (RN 191-0	7-1). PA = 20	)5.0 kcal/mol, 858.	kJ/mol.	
C <sub>24</sub> H <sub>14</sub> <sup>+</sup>	(6.95) IP from 79CLA/S	(243) CH.	(1018)	83	348	77STE/GOL	189-55-9

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>24</sub> H <sub>16</sub> +		· · · · · ·									
	(7.48) IP from 82GLE/C	(321) GUB.	(1342)	148	620	*EST	14620-98-5				
	7.58 IP from 82GLE/C	(323) GUB.	(1351)	148	620	*EST	15065-28-8				
	(7.1) IP is onset of pho	(305) toelectron l	(1274) band.	141	589	*EST	43012-17-5				
C <sub>24</sub> H <sub>20</sub> +			<u></u>								
OQ OO	(7.0) IP is onset of pho	(250) toelectron t	(1046) band.	89	371	*EST	14724-91-5				
O O O O	(7.3) IP is onset of pho	(257) toelectron l	(1075) band.	89	371	*EST	17341-02-5				
achiral	(6.8) IP is onset of photo	(245) toelectron t	(1027) pand.	89	371	*EST	54835-57-3				
chiral	(7.1) IP is onset of photo	(253) coelectron t	(1058) pand.	89	373	*EST	54835-57-3				
00 00	7 (7.3)  IP is onset of photon	(240) oelectron t	(1005) pand.	72	301	*EST	73608-51-2				

Table 1. Positive Ion Table - Continued

Table 1. Positive foil Table - Continued										
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
C <sub>24</sub> H <sub>20</sub> +	(7.0) IP is onset of phot	(317) oelectron b	(1325) and.	155	650	*EST	7130-24-7			
C <sub>24</sub> H <sub>20</sub> Ge +	(8.1) IP is onset of phot	(293) oelectron b	(1226) and (84NOV/PC	(106±6) T).	(445±24)	77PED/RYL	1048-05-1			
C <sub>24</sub> H <sub>20</sub> Pb <sup>+</sup>	(8.0) IP is onset of phot	(346) oelectron b	(1446) and (84NOV/PC	161±4 T).	674±15	78STE	595-89-1			
C <sub>24</sub> H <sub>20</sub> Si <sup>+</sup>	(8.50±0.03) See also: 84NOV/I	(278) POT.	(1162)	82±1	342±6	82PIL/SKI	1048-08-4			
C <sub>24</sub> H <sub>20</sub> Sn +	(8.34±0.03) See also: 84NOV/I	(329) POT.	(1378)	137±2	573±8	77KAN/MOR	595-90-4			
C <sub>24</sub> H <sub>24</sub> +	(7.3) IP is onset of photo	(253) pelectron ba	(1057) and.	84	353	*EST	60144-50-5			
C <sub>24</sub> H <sub>24</sub> Cr <sub>2</sub> N <sub>4</sub> O <sub>4</sub> <sup>+</sup>	(6.5) IP is onset of photo	•	(–171) and.	-191±2	-798±9	81CAV/GAR	67634-82-6			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	Ion) i kJ/moi	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>24</sub> H <sub>24</sub> Mo <sub>2</sub> N <sub>4</sub> O <sub>4</sub> +	(5.5) IP is onset of pho	(–16) otoelectron	(-66) band.	-143±2	-597±9	81CAV/GAR	67634-80-4		
C <sub>24</sub> H <sub>32</sub> +	(6.9) IP is onset of pho	(168) otoelectron	(702) band (81ZHC	9 )/KOV). -	36	*EST			
C <sub>24</sub> H <sub>32</sub> U <sup>+</sup>	(≤6.05) IP from 83GRE/	(≤199) PAY.	(≤831)	59	247	*EST	37274-12-7		
n-C <sub>4</sub> H <sub>9</sub> C(CH <sub>3</sub> ) <sub>3</sub>	(≤6.03) IP from 83GRE/I	(≤193) PAY.	(≤809)	54	227	*EST	63230-70-6		
C24H34N2O3 +	.n-Ce <sup>H</sup> 13 (≤7.55) IP from 81MIL/C	(≤136) ∷L.	(≤568)	-38	-160	*EST	2587-42-0		
C <sub>24</sub> H <sub>36</sub> Cr <sup>+</sup> H <sub>3</sub> C  CH <sub>3</sub>	(≤4.68)	( <b>≤</b> 87)	(≤364)	-21±3	-88±12	82PIL/SKI	12243-39-9		
C <sub>25</sub> H <sub>16</sub> <sup>+</sup>	(7.5) IP is onset of pho	(286) toelectron	(1199) band.	114	475	*EST	159-66-0		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Nekal/mol		Neutral reference	CAS registry number
C24H14+	(6.89)	(240)	(1004)	81	339	*EST	197-70-6
	(7.35) IP from 79CLA/S	(253) CH.	(1057)	83	348	*EST	193-09-9
	7.39 IP from 79CLA/S	(249) CH.	(1042)	79	329	*EST	192-51-8
	(6.71)	(237)	(991)	82	344	*EST	191-85-5
	) (6.82) IP from 79CLA/S	(243) CH.	(1015)	85	357	*EST	
	(6.82) IP from 79CLA/S	(240) CH.	(1006)	83	348	77STE/GOL	189-64-0
	(7.11) IP from 79CLA/S	(245) CH.	(1025)	81	339	•EST	
	(7.07) IP from 79CLA/S	(245) CH.	(1026)	82	344	*EST	

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued							
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>25</sub> H <sub>20</sub> +	(8.0) IP is onset of pho	(280) stoelectron	(1170) band (84NOV/E	95±1 °OT).	398±4	77PED/RYL	630-76-2
C <sub>26</sub> H <sub>14</sub> <sup>+</sup>	(7.12)	(248)	(1038)	84	351	*EST	190-95-4
© <u>9</u> 0 <u>9</u> 0	6.72±0.02	(241)	(1008)	86	360	•EST	188-96-5
	(6.99)	(247)	(1034)	86	360	*EST	5869-30-7
	(6.96)	(244)	(1022)	84	351	*EST	190-84-1
	(6.82±0.04)	(243)	(1018)	86	360	*EST	188-89-6
C <sub>26</sub> H <sub>16</sub> <sup>+</sup>	(7.37)	(290)	(1213)	120	502	*EST	187-83-7
00000	(6.61±0.02)	(251)	(1050)	99	413	•EST	239-98-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	$\Delta_{\mathbf{f}}H(Nc)$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C <sub>26</sub> H <sub>16</sub> +	7.17±0.02	(267)	(1117)	102	425	•EST	217-42-5
	(7.36)	(262)	(1095)	92	385	*EST	217-37-8
	6.97±0.02 See also: 75CLA/5	(255) SCH, 79CL4	(1067) \/SCH.	94	394	•EST	216-00-2
8000	(6.99±0.02) See also: 75CLA/S	(258) SCH.	(1078)	96	403	*EST	227-04-3
	(6.97±0.04)	(257)	(1076)	96	403	*EST	217-54-9
	7.20±0.02 See also: 75CLA/S		(1072) /SCH.	90	377	*EST	191-68-4
	(6.36±0.02) See also: 75CLA/S	(247) CH.	(1035)	101	422	*EST	258-31-1
0000	(6.92±0.02)	(258)	(1080)	99	413	*EST	222-78-6

Table 1. Positive Ion Table - Continued

ION	Indication and the	A 77/-		A 7***	1	NI	CASi-
Neutral	Ionization potential eV	∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>26</sub> H <sub>16</sub> +	(7.19±0.02)	(253)	(1057)	87	363	*EST	220-77-9
	7.15±0.02	(258)	(1080)	93	390	*EST	196-64-5
	(6.83±0.02)	(254)	(1062)	96	403	*EST	220-82-6
900	7.40±0.02 See also: 75CLA/	(263) SCH.	(1099)	92	385	*EST	215-26-9
	(7.20±0.02)	(262)	(1098)	96	403	*EST	222-54-8
C <sub>26</sub> H <sub>25</sub> ClN <sub>2</sub> O <sub>3</sub> +	Narie in	(2)	re trida		F = CASAI		<del> </del>
C <sub>2</sub> H <sub>5</sub> N O NC <sub>2</sub>	(6.94±0.05)	(115)	+ 57 P UE7	′ ≠ R ¹ -45	6 <i>G</i> 187	*EST	989-38-8
C <sub>26</sub> H <sub>38</sub> N <sub>2</sub> O <sub>3</sub> + O	,0-n-C <sub>7</sub> H <sub>15</sub> (≤7.57) IP from 81MIL/C		(≤530)	-48	-200	*EST	2635-26-9
С <sub>26</sub> H <sub>46</sub> + СH <sub>3</sub> (CH <sub>2</sub> ) <sub>16</sub> -СH-СH <sub>2</sub> CH	<sup>3</sup> (8.95±0.10)	(123)	(516)	−83±1.2	-348±5	77PED/RYL	72557-70-1

Table 1. Positive Ion Table - Continued

			TO TODA	Continued				
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number	
C <sub>28</sub> H <sub>14</sub> +	(7.08)	(248)	(1037)	84	353	•EST	190-70-5	
	(6.92±0.04)	(249)	(1040)	89	372	*EST	190-71-6	
	(6.30)	(234)	(980)	89	372	*EST	190-39-6	
C <sub>28</sub> H <sub>16</sub> +	(6.51)	(252)	(1055)	102	426	*EST	191-87-7	
	(6.64)	(247)	(1033)	94	392	*EST	191-81-1	
	(6.51)	(247)	(1035)	97	406	*EST	190-36-3	
	(6.96) IP from 79CLA/S0	(262) CH.	(1098)	102	426	*EST	191-20-8	
	(6.99) IP from 79CLA/S0	(256) CH.	(1072)	95	397	*EST	192-47-2	

Table 1. Positive Ion Table - Continued

	Table	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
C <sub>28</sub> H <sub>16</sub> +	(6.85)	(253)	(1058)	95	397	*EST	197-69-3				
	(6.83) IP from 79CLA/S	(257) CH.	(1075)	99	416	*EST					
	(7.00) IP from 79CLA/S	(252) CH.	(1055)	91	380	*EST					
	(7.00±0.04)	(250)	(1044)	88	369	*EST	385-14-8				
	(6.57) IP from 79CLA/S0	(253) CH.	(1059)	102	425	*EST	196-45-2				
	(6.82)	(254)	(1064)	97	406	*EST	14147-38-7				
	(6.95) IP from 79CLA/SO	(260) CH.	(1086)	99	416	*EST	193-11-3				
00000	(6.86)	(253)	(1059)	95	397	*EST	197-74-0				

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(Ne		Neutral reference	CAS registry number			
C <sub>28</sub> H <sub>16</sub> +	(7.33±0.04) See also: 79CLA/	(264) SCH.	(1104)	95	397	*EST	192-59-6			
C <sub>28</sub> H <sub>32</sub> CIN <sub>2</sub> O <sub>3</sub> +	••••	2. 2	81 BY WE CLEAN							
(C2H5)2N O O N(C2H5)2	(6.70±0.05) IP from 81TIM/K	(109) OR.	(455)	<b>-</b> 46	-191	*EST				
C <sub>30</sub> H <sub>14</sub> +	(6.50)	(244)	(1021)	94	394	*EST	190-31-8			
	(6.42±0.02)	(244)	(1022)	96	403	*EST	190-55-6			
C <sub>30</sub> H <sub>16</sub> +	(7.04)	(269)	(1125)	107	446	*EST	14258-76-5			
	(6.78)	(265)	(1110)	109	455	*EST	5869-31-8			
00000	(6.97)	(254)	(1063)	93	391	*EST	190-87-4			
	(6.90±0.04)	(259)	(1086)	100	420	*EST	385-13-7			

Table 1. Positive Ion Table - Continued

	Table 1. Positive foil Table - Continued									
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Ic		Δ <sub>f</sub> H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number			
C <sub>30</sub> H <sub>16</sub> <sup>+</sup>	(6.42±0.02)	(246)	(1029)	98	409	•EST	188-72-7			
	(7.13)	(260)	(1088)	96	400	*EST	190-81-8			
	(6.77)	(256)	(1072)	100	419	•EST	190-85-2			
C <sub>30</sub> H <sub>18</sub> +	(7.35±0.02)	(280)	(1171)	110	462	*EST	196-62-3			
	(6.59±0.02)	(280)	(1172)	128	536	*EST	222-81-1			
	(7.19±0.02)	(273)	(1144)	108	450	*EST	27798-46-5			
	6.62±0.02 See also: 75CLA/	(263) SCH.	(1101)	110	462	•EST	216-08-0			
60000	(6.64±0.02)	(264)	(1103)	110	462	*EST	227-09-8			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ <sub>f</sub> H(Id		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C30H18+	(7.17±0.02)	(276)	(1154)	110	462	*EST	213-44-5
0000	(6.89±0.02)	(274)	(1145)	115	480	*EST	222-75-3
	(7.04±0.02)	(275)	(1150)	113	472	•EST	222-58-2
	(7.25)	(314)	(1315)	147	616	•EST	16914-68-4
	7.43±0.02 See also: 75CLA/5	(275) SCH.	(1151)	104	434	*EST	215-11-2
	(6.99±0.02) See also: 75CLA/S	(269) SCH.	(1127)	108	453	*EST	215-96-3
C <sub>30</sub> H <sub>36</sub> ClN <sub>2</sub> O <sub>3</sub> +	(6.58±0.05) IP from 81TIM/K6	(99) OR.	(416)	-52	-219	•EST	
C <sub>32</sub> H <sub>14</sub> +	6.71 See also: 81CLA/R	254 ROB.	1062	99	415	77STE/GOL	190-26-1

Table 1. Positive Ion Table - Continued

	Table	Table 1. Positive Ion Table - Continued								
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C <sub>32</sub> H <sub>16</sub> +	(7.04)	(263)	(1101)	101	422	*EST	190-66-9			
	(6.92)	(260)	(1089)	101	422	*EST	190-72-7			
	(6.88)	(264)	(1104)	105	440	*EST	190-74-9			
C <sub>32</sub> H <sub>18</sub> +	(6.65) IP from 79CLA/S	(269) SCH.	(1125)	115	483	*EST	189-43-5			
	(6.94) IP from 79CLA/S	(274) CH.	(1145)	114	475	*EST				
00000	(6.91) IP from 79CLA/S	(270) CH.	(1132)	111	465	*EST	192-60-9			
	(6.42) IP from 79CLA/S	(264) CH.	(1103)	115	483	*EST				
	(7.02) IP from 79CLA/S	(276) CH.	(1153)	114	476	*EST				

Table 1. Positive Ion Table - Continued

				Contin			-
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
C <sub>32</sub> H <sub>18</sub> +	(6.99) IP from 79CLA/S	(277) CH.	(1153)	116	485	•EST	
	(6.36) IP from 79CLA/S	(264) CH.	(1107)	118	493	*EST	196-46-3
	(7.30±0.04)	(279)	(1169)	111	465	*EST	192-54-1
C34H16+	(6.74±0.02)	(261)	(1093)	106	443	*EST	188-11-4
	6.82±0.02	(261)	(1092)	104	434	•EST	187-94-0
C34H18+	(6.59±0.02)	(265)	(1109)	113	473	*EST	
	(6.48±0.02)	(263)	(1102)	114	477	*EST	
	(6.42±0.02)	(262)	(1097)	114	477	*EST	190-93-2

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>ξ</sub> Η(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C34H18+	(6.59±0.02)	(265)	(1109)	113	473	*EST	191-46-8		
	(6.84)	(267)	(1119)	110	459	*EST	313-63-3		
	(6.27±0.02)	(256)	(1073)	112	468	*EST	191-79-7		
	(6.22±0.02)	(260)	(1088)	117	488	*EST	188-13-6		
	6.58	(276)	(1155)	124	520	*EST	191-53-7		
C <sub>34</sub> H <sub>20</sub> +	(7.15)	(327)	(1370)	162	680	*EST	20495-12-9		
	(6.83±0.02)	(280)	(1172)	123	513	*EST	385-15-9		
0000	(6.90±0.02)	(286)	(1196)	127	530	*EST	214-87-9		

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued								
ION Neutral	Ionization potential	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number		
C <sub>34</sub> H <sub>20</sub> +	(7.00±0.02)	(281)	(1177)	120	502	*EST	215-95-2		
	(6.73±0.02)	(278)	(1162)	122	513	•EST	385-16-0		
C <sub>36</sub> H <sub>16</sub> +	(6.76±0.02)	(267)	(1117)	111	464	*EST	53086-28-5		
	(6.70±0.04)	(265)	(1111)	111	464	*EST	190-47-6		
C <sub>36</sub> H <sub>18</sub> <sup>+</sup>	(≤7.10)	(≤284)	(≤1187)	120	502	*EST	188-00-1		
	(6.88) IP from 79CLA/S	(306) CH.	(1282)	148	618	*EST .			
	(6.88)	(271)	(1135)	113	471	*EST	313-62-2		
C <sub>36</sub> H <sub>20</sub> <sup>+</sup>	(6.68)	(284)	(1190)	130	545	*EST	197-73-9		

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H(Io	on) kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>36</sub> H <sub>20</sub> +	(6.82)	(287)	(1202)	130	544	*EST	36474-85-8
	(6.95) IP from 79CLA/S	(286) CH.	(1195)	125	525	*EST	
0000	(6.74) IP from 79CLA/S	(283) CH.	(1183) -	127	533	*EST	
C38H16+	(6.81±0.02)	(271)	(1134)	114	477	*EST	41163-25-1
C38H18 <sup>+</sup>	(6.38±0.02)	(270)	(1132)	123	516	•EST	190-90-9
	(6.50±0.02)	(277)	(1158)	127	531	*EST	190-89-6
C <sub>38</sub> H <sub>20</sub> +	(6.58) IP from 79CLA/S	(282) CH.	(1181)	130	546	*EST	
	(6.06±0.02)	(266)	(1112)	126	528	*EST	187-96-2

Table 1. Positive Ion Table - Continued

ION	Ionisation actual: 1	A FF/T		A 77/h1	utual)	No	CAS manist
Neutral	Ionization potential eV	∆ <sub>f</sub> H(Id kcal/mol		$\Delta_f H$ (Nekcal/mol		Neutral reference	CAS registry number
C <sub>38</sub> H <sub>20</sub> +	(6.40±0.02)	(273)	(1144)	126	527	*EST	34814-77-2
0000000	(6.72)	(285)	(1193)	130	545	*EST	14529-73-8
C <sub>38</sub> H <sub>22</sub> +			<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>				
	(7.07)	(365)	(1527)	202	844	*EST	20495-14-1
	6.65±0.02 See also: 75CLA/	(290) SCH.	(1212)	136	570	*EST	216-07-9
C <sub>40</sub> H <sub>20</sub> +	(6.11±0.02)	(270)	(1128)	129	539	*EST	188-73-8
C <sub>42</sub> H <sub>18</sub> <sup>+</sup>	6.87±0.02	(280)	(1170)	121	508	•EST	190-24-9
C <sub>42</sub> H <sub>20</sub> +	(6.72±0.02)	(287)	(1199)	132	551	*EST	34814-80-7

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	e - Contin	ued		
ION Neutral	Ionization potential	Δ <sub>f</sub> H() kcal/mo	lon) l kJ/mol	Δ <sub>f</sub> H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C <sub>42</sub> H <sub>22</sub> +	(6.22) IP from 79CLA/S	(294) CH.	(1231)	151	631	*EST	190-09-0
	(6.71±0.02)	(283)	(1186)	129	538	*EST	190-22-7
	(6.18±0.02)	(282)	(1181)	140	585	*EST	34814-82-9
C <sub>42</sub> H <sub>24</sub> +	(6.99)	(390)	(1633)	229	959	*EST	57520-29-3
	(7.52±0.02)	(356)	(1491)	183	765	*EST	190-23-8
	(6.85±0.02)	(317)	(1326)	159	665	•EST	214-77-7
C <sub>42</sub> H <sub>28</sub> +	6.41 IP from 81SAT/SI	334 3K.	1399	187±5	781±22	77PED/RYL	517-51-1
C <sub>44</sub> H <sub>20</sub> +	(6.79±0.02)	(287)	(1199)	130	544	•EST	70346-75-7
		***					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential		(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
C <sub>44</sub> H <sub>22</sub> +	(6.80) IP from 79CLA/S	(333) CH.	(1394)	176	738	*EST	
C <sub>46</sub> H <sub>26</sub> +	(6.95)	(417)	(1744)	256	1073	*EST	57468-45-8
	(6.88±0.02)	(325)	(1360)	166	696	*EST	62662-49-1
C <sub>48</sub> H <sub>24</sub> <sup>+</sup>	(6.75)	(297)	(1242)	141	590	*EST	1065-80-1
C <sub>50</sub> H <sub>26</sub> <sup>+</sup>	(6.70) IP from 79CLA/S	(329) CH.	(1379)	175	732	*EST	72382-92-4
C <sub>50</sub> H <sub>28</sub> <sup>+</sup>	(6.93)	(444)	(1856)	284	1187	•EST	57468-46-9
C <sub>54</sub> H <sub>30</sub> +	(6.91)	(470)	.(1968)	311	1302	*EST	24386-06-9

Table 1. Positive Ion Table - Continued

ION	Ionization potential		$\Delta_{\mathbf{f}}H(Ion)$		utral)	Neutral	CAS registry
Neutral	cV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C <sub>58</sub> H <sub>32</sub> +							
~58**32							
~10	(6.88)	(497)	(2080)	338	1416	*EST	57483-71-3
10101							
12							
Ca+							
Ca	6.11321±0.00002	183.6	<u>768.0</u>	42.6	178.2	82TN270	7440-70-2
		<u>183.5</u>	<u>767.5</u>	42.5	177.7		
CaCl+							
CaCl	5.61±0.13	106	443	-24.7±1.2	-103.4±5.0	87GAR/PAR	15606-71-0
		106	444		-102.7±5.0		
	IP and $\Delta_{\mathbf{f}}H(\operatorname{Ion})$	derived fron	n onset of end	othermic reacti	ion (84MEY/S	CH).	
CaCl <sub>2</sub> +							
CaCl <sub>2</sub>	(≤10.0)	(≤118)	(≤494)	-113	-471	82TN270	10043-52-4
4	. ,	(≤118)	(≤493)	-113	<b>-472</b>		
	See also: 82EMO	KIE, 79LE	E/POT2.				
CaH+							
CaH CaH	(5.86±0.09)	(190)	(794)	55	229	82TN270	14452-75-6
	` ,						
		(190)	(795)	55	230		
	Value for $\Delta_{\mathbf{f}}H$ (Io	n) derived f	rom onset ene			is in	
	Value for $\Delta_{\mathrm{f}}H$ (Io good agreement (	n) derived f	rom onset ene			is in	
CaHO+	<u> </u>	n) derived f	rom onset ene			is in	
СаНО <sup>+</sup> СаОН	<u> </u>	n) derived f	rom onset ene			is in 87GAR/PAR	12177-67-2
	good agreement (	n) derived f 86ELK/AR (89)	rom onset energy. (371)	ergy of endother	-175.7	87GAR/PAR	12177-67-2
	good agreement (	n) derived f 86ELK/AR (89)	rom onset energy. (371)	ergy of endother	-175.7	87GAR/PAR	12177-67-2
CaOH	good agreement ( $5.7$ $\Delta_f H( ext{Ion})$ from or	n) derived f 86ELK/AR (89)	rom onset energy. (371)	ergy of endother	-175.7	87GAR/PAR	12177-67-2
CaOH CaI+	good agreement ( $5.7$ $\Delta_f H(\text{Ion})$ from or 0 K values.	n) derived f 86ELK/AR (89)	(371)	ergy of endother	-175.7	87GAR/PAR	12177-67-2 15923-87-2
CaOH	good agreement ( $5.7$ $\Delta_f H( ext{Ion})$ from or	n) derived f 86ELK/AR (89)	rom onset energy. (371)	-42.0 on (83MUR).	-175.7 See also: 81M	87GAR/PAR UR.	
CaOH  CaI +  CaI	good agreement ( $5.7$ $\Delta_f H(\text{Ion})$ from or 0 K values.	n) derived f 86ELK/AR (89) nset of endo	(371) othermic reaction (584)	-42.0 on (83MUR).	-175.7 See also: 81M	87GAR/PAR UR.	
CaOH  CaI +  CaI  CaI <sub>2</sub> +	good agreement ( 5.7 $\Delta_{\rm f}H({\rm lon}) \ {\rm from\ or}$ 0 K values. (6.1±0.3)	(89) nset of endo (139) (137)	(371) othermic reacti	-42.0 on (83MUR)1±21 -4	-175.7 See also: 81M -5±84 -17	87GAR/PAR UR. 79HUB/HER	15923-87-2
CaOH  CaI +  CaI	good agreement ( $5.7$ $\Delta_f H(\text{Ion})$ from or 0 K values.	(89) nset of endo (139) (139)	(371) othermic reacti (584) (572)	-42.0 on (83MUR)1±21 -4	-175.7 See also: 81M -5±84 -17	87GAR/PAR UR.	
CaOH  CaI +  CaI  CaI <sub>2</sub> +	good agreement ( 5.7 $\Delta_{\rm f}H({\rm lon}) \ {\rm from\ or}$ 0 K values. (6.1±0.3)	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140)	(371) othermic reacti (584) (572)	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4	-175.7 See also: 81M -5±84 -17 -258±17 -255±17	87GAR/PAR UR. 79HUB/HER 85JANAF	15923-87-2
CaI + CaI  CaI <sub>2</sub> + CaI <sub>2</sub>	good agreement (  5.7 $\Delta_f H(\text{Ion})$ from or 0 K values.  (6.1±0.3)	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140)	(371) othermic reacti (584) (572)	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4	-175.7 See also: 81M -5±84 -17 -258±17 -255±17	87GAR/PAR UR. 79HUB/HER 85JANAF	15923-87-2
CaOH  CaI +  CaI  CaI <sub>2</sub> +  CaI <sub>2</sub> CaO+	5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140) toelectron b	(371) thermic reacti (584) (572) (581) (584) pand (79LEE/1	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4 POT2). See also	-175.7 See also: 81M -5±84 -17 -258±17 -255±17 b: 82EMO/KII	87GAR/PAR UR. 79HUB/HER 85JANAF 3.	15923-87-2 10102-68-8
CaOH  CaI +  CaI  CaI <sub>2</sub> +  CaI <sub>2</sub>	5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140)	(371) othermic reacti (584) (572)	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4	-175.7 See also: 81M -5±84 -17 -258±17 -255±17	87GAR/PAR UR. 79HUB/HER 85JANAF	15923-87-2
CaOH  CaI +  CaI  CaI <sub>2</sub> +  CaI <sub>2</sub> CaO+	5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140) toelectron b	(371) thermic reacti (584) (572) (581) (584) pand (79LEE/1	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4 POT2). See also	-175.7 See also: 81M -5±84 -17 -258±17 -255±17 b: 82EMO/KII	87GAR/PAR UR. 79HUB/HER 85JANAF 3.	15923-87-2 10102-68-8
CaOH  CaI +  CaI  CaI <sub>2</sub> +  CaI <sub>2</sub> CaO +  CaO	5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140) toelectron b	(371) thermic reacti (584) (572) (581) (584) pand (79LEE/1	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4 POT2). See also (6±4)	-175.7 See also: 81M -5±84 -17 -258±17 -255±17 b: 82EMO/KII	87GAR/PAR UR. 79HUB/HER 85JANAF 3. 83PED/MAR	15923-87-2 10102-68-8
CaOH  CaI + CaI  CaI <sub>2</sub> + CaI <sub>2</sub> CaO+ CaO	5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho	(89) n) derived f 86ELK/AR (89) nset of endo (139) (137) (139) (140) toelectron b	(371) thermic reacti (584) (572) (581) (584) pand (79LEE/1	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4 POT2). See also	-175.7 See also: 81M -5±84 -17 -258±17 -255±17 b: 82EMO/KII	87GAR/PAR UR. 79HUB/HER 85JANAF 3.	15923-87-2 10102-68-8
CaOH  CaI + CaI  CaI <sub>2</sub> + CaI <sub>2</sub> CaO + CaO  CaO <sub>4</sub> W + CaWO <sub>4</sub>	good agreement ( 5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho  (6.9) IP from 83MUR.	(89) nset of endo (139) (137) (139) (140) toelectron b	(371) thermic reacti (584) (572) (581) (584) pand (79LEE/1	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4 POT2). See also (6±4)	-175.7 See also: 81M -5±84 -17 -258±17 -255±17 0: 82EMO/KII	87GAR/PAR UR. 79HUB/HER 85JANAF 3. 83PED/MAR	15923-87-2 10102-68-8
CaOH  CaI + CaI  CaI <sub>2</sub> + CaI <sub>2</sub> CaO+ CaO  CaO <sub>4</sub> W+	good agreement ( 5.7 Δ <sub>f</sub> H(Ion) from or 0 K values.  (6.1±0.3)  (8.7)  IP is onset of pho  (6.9) IP from 83MUR.	(89) nset of endo (139) (137) (139) (140) toelectron b	(371) thermic reacti (584) (572) (581) (584) pand (79LEE/1	-42.0 on (83MUR).  -1±21 -4  -62±4 -61±4 POT2). See also (6±4)	-175.7 See also: 81M -5±84 -17 -258±17 -255±17 0: 82EMO/KII	87GAR/PAR UR. 79HUB/HER 85JANAF 3. 83PED/MAR	15923-87-2 10102-68-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$		$\Delta_{\mathbf{f}}H(Nc$	utral)	Neutral	CAS registry	
Neutral	eV	kcal/mol	kJ/mol	kcal/mol		reference	number
Ce+							
Се	5.5387±0.0004	229 <i>229</i>	957 <i>957</i>	101 <i>101.1</i>	423 <i>423.4</i>	82TN270	7440-45-1
CeI <sub>3</sub> +							
CeI <sub>3</sub>	8.7 IP is onset of photon	101 toelectron b	422 and (83RUS)	–100 (GOO).	-417	82TN270	
CeO +							
CeO	(4.90±0.1)	(81) <i>(81)</i>	(339) <i>(341)</i>	-32±3 -32	-134±12 - <i>132</i>	83PED/MAR	12014-74-3
CeS+		- 1					,
CeS	(6.0±0.6)	(170) <i>(170)</i>	(710) <i>(713)</i>	31 <i>32</i>	131 <i>134</i>	82TN270	12014-82-3
Ce <sub>2</sub> +					· · · · · · · · · · · · · · · · · · ·		
Ce <sub>2</sub>	(5.6±0.4)	(273) (274)	(1142) <i>(1147)</i>	144 <i>145</i>	602 <i>607</i>	82TN270	12595-88-9
Cf <sup>+</sup>							
Cf	6.3 Sec: 81CHE/GAB	192	804	47	196	85KLE/WAR	7440-71-3
CI+							
CI	12.967	328 <i>328</i>	1372 <i>1371</i>	29.0 <i>28.6</i>	121.3 <i>119.6</i>	85JANAF	22537-15-1
	See also: 81KIM/K	AT.					
CICs +							,,,,
CsCl	(7.84±0.05)	(122) <i>(122)</i>	(510) <i>(512)</i>	−59 <i>−58.4±1.8</i>	-247 -244.4±7.5	84PAR/WEX	7647-17-8
	A value of 8.32±0.1	eV has also	been report	ed for the ioniz	ation potentia	1.	
CICsNa +							
NaCsCl	3.9±0.1 IP from 85KAP/RA		<i>(88)</i> ues.	-69	-288	*EST	95860-64-3
ClCs <sub>2</sub> +							· · · · · · · · · · · · · · · · · · ·
Cs <sub>2</sub> Cl	3.4±0.2 IP from 85KAP/RA		-4 ies.	-79±6	−332±25	85KAP/RAD	87331-16-6
ClCu <sup>+</sup>							
CuCl	(10.7±0.3) 0 K values.	(265)	(1110)	19	78	79HUB/HER	7758-89-6
CIF+							
CIF	12.65±0.01	280 <i>280</i>	1170 <i>1170</i>	-12.0±0.1 -12.0±0.1		85JANAF	7790-89-8
	See also: 84DYK/J	os.					

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			ΔεHΩ	Neutral)	Neutral	CAS registry
Neutral	eV	keal/mc		kcal/mo		reference	number
CIFO <sub>2</sub> +							
CIO <sub>2</sub> F	(12.41±0.10) IP from 80BAL/N	(278) IIK.	(1164)	-8	-33	73BAR	13637-83-7
CIFO <sub>2</sub> S <sup>+</sup>							
SO <sub>2</sub> FCI	(12.4) IP is onset of pho	(151) toelectron	(632) a band.	-135	<b>-</b> 564	81WOO	13637-84-8
CIFO <sub>3</sub> +							
CiO <sub>3</sub> F	(12.945±0.005)	(293) <i>(295)</i>	(1225) <i>(1234)</i>	-6 -4	~24 ~15	82TN270	7616-94-6
CIF <sub>2</sub> +							
CIF <sub>2</sub>	(12.77 $\pm$ 0.05) $\Delta_f H$ (Ion) derived in CIF <sub>3</sub> is 261 kcal			-25 al (13.78±0.0'	~105 7 eV)	62ARM/KRI	24801-48-7
CIF <sub>3</sub> +				······			
CIF <sub>3</sub>	(12.65±0.05)	(253) <i>(254)</i>	(1057) <i>(1061)</i>	-39 -38	-163 -159	82BAU/COX	7790-91-2
CIF <sub>5</sub> S <sup>+</sup>							
SF <sub>5</sub> Cl	(12.335±0.005)	(34) <i>(37)</i>	(142) <i>(155)</i>	-250 -247	~1048 <i>~1035</i>	82TN270	13780-57-9
CIH+							
HCI	12.747	271.9 <i>271.4</i>	1137.6 <i>1137.7</i>		.04 -92.3±0.2 .04 -92.1±0.2	85JANAF	7647-01-0
	IP for formation of IP for formation of	of HCl + (4 of HCl + (4	<sup>2</sup> Π <sub>3/2</sub> ) from 79F <sup>2</sup> Π <sub>1/2</sub> ) = 12.828 c	IUB/HER, 82 eV. See also:	2NAT/PEN, 77R 82VON/ASB, 84	OS/DRA, 82LEV/I WAN/DIL, 81KIM	JA. /KAT.
CID+							
DCI	12.754	271.8 <i>271.9</i>	1137.3 <i>1137.6</i>		.05 -93.3±0.2 .05 -93.1±0.2	85JANAF	7698-05-7
	IP for formation of	of DCI( <sup>2</sup> π <sub>3</sub>	<sub>3/2</sub> ) from 79HU	B/HER, 83P	EN/NAT.		
Сіно+							
носі	(11.12±0.01)	(238) <i>(239)</i>	(995) <i>(998)</i>	-19 -18	-78 -75	82BAU/COX	7790-92-3
CIH <sub>2</sub> +					200		
H <sub>2</sub> Cl		207	867				
	From proton affin standard (84LIA/					d relative to CO	
CIH <sub>2</sub> N+							
NH <sub>2</sub> Cl	(9.85±0.02)	(240)	(1003)	13	53	*EST	10599-90-3
CIH <sub>3</sub> SI <sup>+</sup>							
SiH <sub>3</sub> Cl	11.4 IP is onset of phot	(215) oelectron	(899) band.	<b>-48</b>	-201	81BEL/PER	13465-78-6

Table 1. Positive Ion Table - Continued

Neutral	Ionization potential eV	• .	on) kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number	
CII+							· · · · · · · · · · · · · · · · · · ·	
ICI	10.088±0.01	236.8 <i>237.2</i>	990.8 <i>992.4</i>	4.2±0.02 4.6±0.2	17.5±0.1 19.1±0.1	85JANAF	7790-99-0	
	See also: 84DYK			4.010.2	19.1±0.1			
ClIn +								
ClIn	(9.51)	(201) (204)	(843) <i>(852)</i>	-18 -15	-75 -65	82TN270	13465-10-6	
CIK+				·				
KCI	(8.0±0.4)	(133) <i>(134)</i>	(557) (559)		-214.7±0.4 -212.9±0.4	85JANAF	7447-40-7	
CIKNa +						·		
NaKCI	4.0±0.1 IP from 85KAP/I	<i>(26)</i> RAD. 0 K va	<i>(107)</i> lues.	-67	-279	*EST	95860-66-5	
CIK <sub>2</sub> +								
K <sub>2</sub> Cl	3.5±0.2 IP from 85KAP/I	<i>10</i> RAD. 0 K va	<i>44</i> lues.	−70±4	−294±17	85KAP/RAD	95386-61-1	
CILi <sup>+</sup>								
LiCl	9.57	174 <i>174</i>	728 <i>728</i>	-47±3 -47±3	-196±13 -196±13	85JANAF	7447-41-8	
CINO+				<del></del>				
NOCI	10.87±0.01	263	1101	12	52	82BAU/COX	2696-92-6	
	See also: 83BIN.	264	1103	13	54			
CINO <sub>2</sub> +			<del></del>					
CINO <sub>2</sub>	(11.84)	(276) <i>(277</i> )	(1155) (1160)	3 4	13 <i>18</i>	82BAU/COX	13444-90-1	
CIN <sub>3</sub> +								
CIN <sub>3</sub>	(10.20±0.01)	(313.9)	(1313.4)	78.7	329.3	83DEW/RZE	13973-88-1	
CINa +		4,44			····			
NaCl	8.92±0.06	162 163	679 681		−181±2 − <i>180</i> ±2	85JANAF	7647-14-5	
CINa <sub>2</sub> +			····	······································				
Na <sub>2</sub> Cl	4.1±0.1 IP from 85KAP/R	<i>36</i> RAD. 0 K val	<i>152</i> ues.	−58±4	<i>−244±17</i>	85KAP/RAD	84008-89-9	
CINi <sup>†</sup>								
NiCl	(11.4±0.5)	(306) <i>(306)</i>	(1282) <i>(1282)</i>	43±1 43±1	182±4 <i>182±4</i>	85JANAF	13931-83-4	

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{\mathrm{f}}H$ (1	Veutral)	Neutral	CAS registry
Neutral	eV		ol kJ/mol	-	ol kJ/mol	reference	number
CIO+		-					
CiO	10.95	277	1158	24.4	101.9	82BAU/COX	14989-30-1
	<b>T</b>	277	1158	24.3	101.8		
•	IP is onset of pho	otoelectron	ı band.				
CIOP+							
POCI	(11.5)	(205)	(859)	-60	-251	83BIN/LAK	21295-50-1
	IP from 83BIN.						
CIOSb+							
SbOCI	(10.7)	(247)	(1032)	0	0	83BIN	7791-08-4
	IP from 83BIN.						
CIO. ‡			•				
CIO <sub>2</sub> + OCIO	10.36±0.02	262	1097	23±2	97±8	82BAU/COX	10049-04-4
00.0	10.5010.02	263	1099	24	99	02DNO/COX	10042-04-4
	See also: 80BAL	NIK.					
CIRb <sup>+</sup>	<u> </u>						
RbCl	(8.50±0.03)	(141)	(591)	-55	-229	82TN270	7791-11-9
NOC!	(0.0010.00)	(142)	(593)	-54	-227	02114270	7751-11-5
							<del></del>
CISr+	***	(00)	(0.(0)		404.0	0.67.131.17	44000 00 4
SrCI	5.10±0.06	(88) <i>(88)</i>	(368) <i>(370)</i>	-30±2 -29±2	−124±8 <i>−122±8</i>	85JANAF	14989-33-4
	See also: 84MEY		(370)	-2712	12210		
		-		<u> </u>			
CITI +							
TICI	9.70±0.03	207 <i>207</i>	868 <i>868</i>	-16	-68	82TN270	7791-12-0
	See also: 83BAN		808	-16	-68		
			<del> </del>				
Cl <sub>2</sub> +				_	_		
Cl <sub>2</sub>	11.480±0.005	265 <i>265</i>	1108	0 <i>0</i>	0 <i>0</i>	*DEF	7782-50-5
	Cited ionization		1108 for formation o	-			
	(77ROS/DRA, 8					of Clo <sup>+</sup> ( <sup>2</sup> II 1 m)	
	requires 11.56 eV			,012 11400	-,,,	0. 0.2 (1/2)	
71 O. +					···		
Cl <sub>2</sub> Co <sup>+</sup> CoCl <sub>2</sub>	(10.4)	(217)	(000)	_22.2	_0/1+0	RSTANAD	7646.70 0
Coci2	(10.4)	(217) <i>(217)</i>	(909) <i>(908)</i>	−22±2 −23±2	-94±8 - <i>95±</i> 8	85JANAF	7646-79-9
	IP is onset of pho						
Cl <sub>2</sub> Cr <sup>+</sup> CrCl <sub>2</sub>	(0.4)	(106)	(770)	21	_120	ያታፒጒነታታስ	10040 05 5
CrC12	(9.4) IP is onset of pho	(186)	(779)	-31	-128	82TN270	10049-05-5

Table 1. Positive Ion Table - Continued

Ionization potential eV	_				Neutral reference	CAS registry number
11.6	(120)	(501)	100	500	00000 1000	
	(140)	(585)	-129 -128	-538 -534	821N270	14977-61-8
						·
(≤9.15)	(≤53) <i>(≤54)</i>	(≤223) (≤227)	-158 -157	-660 -656	81LIN/BES	12258-95-6
			**************************************			·····
(10.97±0.3) IP from 81CLA/S	(-150) OW.	(-629)	-403	-1687	*EST	29871-62-3
(10.0)	(197) <i>(197)</i>	(824) <i>(823)</i>	-34 -34	-141 -142	85JANAF	7758-94-3
IP is onset of phot	oelectron	band.				· · · · · · · · · · · · · · · · · · ·
(10.20±0.05)	(194)	(813)	-41±1	-171±5	79TPIS	10060-11-4
IP from 82JON/V		(814)	-41	<b>-170</b>		
(9.98±0.05)	(269)	(1124)	38	161	*EST	3400-09-7
11.4 IP is onset of photo	(183) Delectron	(765) band.	-80 .	-335	81BEL/PER	4109-96-0
Ionization potentia	l for forn	952 from 83LIN/BR( nation of HgCl <sub>2</sub>	-35±1 D) refers to fo +( <sup>2</sup> П <sub>1/2g</sub> ) is	-146±6 ormation of Hg0 11.505±0.003 e	71JANAF Cl <sub>2</sub> + ( <sup>2</sup> π <sub>3/2g</sub> ). V.	7487-94-7
(≤9.60)	(≤72)	(≤303)	-149	-623	82TN270	12258-97-8
	eV  11.6  IP is onset of photo  (≤9.15)  (10.97±0.3)  IP from 81CLA/So  (10.0)  IP is onset of photo  (10.20±0.05)  IP from 82JON/V/  (9.98±0.05)  11.4  IP is onset of photo  11.380±0.003  Cited ionization poround ionization potential See also: 81LEE/Potential See also: 81LEE/	eV kcal/m  11.6 (139) (140) IP is onset of photoelectron  (≤9.15) (≤53) (≤54)  (10.97±0.3) (−150) IP from 81CLA/SOW.  (10.0) (197) (197) IP is onset of photoelectron  (10.20±0.05) (194) (195) IP from 82JON/VAN.  (9.98±0.05) (269)  11.4 (183) IP is onset of photoelectron  11.380±0.003 227 Cited ionization potential (for Ionization potential for form See also: 81LEE/POT.	eV kcal/mol kJ/mol  11.6 (139) (581) (140) (585) IP is onset of photoelectron band.  (≤9.15) (≤53) (≤223) (≤54) (≤227)  (10.97±0.3) (−150) (−629) IP from 81CLA/SOW.  (10.0) (197) (824) (197) (823) IP is onset of photoelectron band.  (10.20±0.05) (194) (813) (195) (814) IP from 82JON/VAN.  (9.98±0.05) (269) (1124)  11.4 (183) (765) IP is onset of photoelectron band.  11.380±0.003 227 952 Cited ionization potential (from 83LIN/BR0 lonization potential for formation of HgCl₂ See also: 81LEE/POT.	eV kcal/mol kJ/mol kcal/mi  11.6 (139) (581) -129 (140) (585) -128  IP is onset of photoelectron band.  (≤9.15) (≤53) (≤223) -158 (≤54) (≤227) -157  (10.97±0.3) (-150) (-629) -403  IP from 81CLA/SOW.  (10.0) (197) (824) -34 (197) (823) -34  IP is onset of photoelectron band.  (10.20±0.05) (194) (813) -41±1 (195) (814) -41  IP from 82JON/VAN.  (9.98±0.05) (269) (1124) 38  11.4 (183) (765) -80  IP is onset of photoelectron band.  11.380±0.003 227 952 -35±1 Cited ionization potential (from 83LIN/BRO) refers to for Ionization potential for formation of HgCl₂ + ( <sup>2</sup> Π1/2g) is See also: 81LEEL/POT.	11.6	11.6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potentia	il ∆ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
Cl <sub>2</sub> Li <sub>2</sub> +							
. Li CI LI	10.20	93 <i>94</i>	390 <i>393</i>	-142 -141	-594 -591	82TN270	12345-57-2
Cl <sub>2</sub> Mg <sup>+</sup> MgCl <sub>2</sub>	(8.5)  IP is onset of pl	(102) (102)	(428) (427)	-94 -94 : 771 EE/POT2	-392 -393	85JANAF	7786-30-3
					· 		
Cl <sub>2</sub> Mn + MnCl <sub>2</sub>	(10.8) IP is onset of pl	(186) notoelectron b	- (778) and.	-63	-264	82TN270	7773-01-5
Cl <sub>2</sub> MoO <sub>2</sub> + MoO <sub>2</sub> Cl <sub>2</sub>	(11.93±0.02)	(124)	(517)	-152	-634	82TN270	13637-68-8
Cl <sub>2</sub> Na <sub>2</sub> +							
Na CI Na	(≤10.30)	(≤102) (≤103)	(≤428) (≤432)	−135±2 <i>−134±2</i>	-566±8 -562±8	85JANAF	12258-98-9
Cl <sub>2</sub> Ni +							
NiCl <sub>2</sub>	(10.8)	(231) (231)	(968) (968)	-18±0.1 -18±0.1	-74±0.3 -74±0.3	82JANAF	7718-54-9
	IP is onset of ph	otoelectron b	and.				
Cl <sub>2</sub> O + Cl <sub>2</sub> O	10.94	271 272	1136 <i>1138</i>	19 <i>20</i>	80 <i>82</i>	82BAU/COX	7791-21-1
Cl <sub>2</sub> OS + soci <sub>2</sub>	10.96	(202) (203)	(844) <i>(847)</i>	-51 -50	-213 -210	82TN270	7719-09-7
Cl <sub>2</sub> O <sub>2</sub> S + so <sub>2</sub> Cl <sub>2</sub>	12.05	193 195	808 <i>814</i>	-85 -83	-355 -349	85JANAF	7791-25-5
Cl <sub>2</sub> Pb+ PbCl <sub>2</sub>	(10.0)  IP is onset of ph	(189) <i>(189)</i> otoelectron b	(791) <i>(793)</i> and. (See: 84)	42±0.3 41±0.3 NOV/POT2).	-174±1 -172±1	85JANAF	7758-95-4

Table 1. Positive Ion Table - Continued

≤9.30)  9.45±0.03  IP from 81KAU/\(\frac{1}{2}\)  (9.66±0.03)  IP from 81KAU/\(\frac{1}{2}\)	(≤64) (≤65) 214 214 VAH. (218) (219)	(\$269) (\$271) 894 895	-150 -150	-628 -626	82TN270 85JANAF	12265-61-1 10545-99-0
9.45±0.03 IP from 81KAU/\ (9.66±0.03)	214 214 214 VAH.	( <i>s</i> 271) 894 895	150 4	-626 -18	· · · · · · · · · · · · · · · · · · ·	Por
IP from 81KAU/\(\) (9.66±0.03)	214 VAH. (218)	895	-		85JANAF	10545-99-0
IP from 81KAU/\(\) (9.66±0.03)	214 VAH. (218)	895	-		85JANAF	10545-99-0
(9.66±0.03)	(218)	(914)				
-		(914)				
	VAH.	(915)	-4 -4	-18 -17	82TN270	10025-67-9
9.25 IP is onset of pho	(206) toelectron b	(860) and.	<b>-</b> 8	-32	82TN270	14457-70-6
9.4) IP is onset of pho	(221) toelectron b	(924) and.	4	17	82TN270	10025-68-0
	<del></del>					
10.93±0.10)	(212) (212)	(889) <i>(889)</i>	-40 -40	-166 -166	82TN270	13569-32-9
10.0)	(182) <i>(183)</i>	(762) <i>(764)</i>	-49 -49±2	-203 -201±10	82TPIS	7772-99-8
IP is onset of pho	toelectron b	and (84NOV/	POT2, 82LEV/	LIA).		
			•			
				<b>-455</b>	82EMO/KIE	10476-85-4
11.85 IP is onset of phot	210 toelectron b	877 and.	-64	-266	82TN270	7646-85-7
			,			
s9.52)	(≤158) <i>(≤158)</i>	(≤660) <i>(≤660)</i>	-62±0.5 -62±0.5	-259±2 -259±2	85JANAF	11093-65-5
	10.0) IP is onset of pho 0.70±0.1 See also: 82EMO, 11.85 IP is onset of pho	(212)  10.0) (182) (183)  IP is onset of photoelectron b  2.70±0.1 (115)  See also: 82EMO/KIE, 79LEI  11.85 210  IP is onset of photoelectron b	(212) (889)  10.0) (182) (762) (183) (764)  IP is onset of photoelectron band (84NOV/  0.70±0.1 (115) (481)  See also: 82EMO/KIE, 79LEE/POT2. 0 K v  11.85 210 877  IP is onset of photoelectron band.	(212) (889) -40  10.0) (182) (762) -49 (183) (764) -49±2  IP is onset of photoelectron band (84NOV/POT2, 82LEV/  0.70±0.1 (115) (481) -109  See also: 82EMO/KIE, 79LEE/POT2. 0 K values.  11.85 210 877 -64  IP is onset of photoelectron band.	(212) (889) -40 -166  10.0) (182) (762) -49 -203 (183) (764) -49±2 -201±10  IP is onset of photoelectron band (84NOV/POT2, 82LEV/LIA).  2.70±0.1 (115) (481) -109 -455  See also: 82EMO/KIE, 79LEE/POT2. 0 K values.  11.85 210 877 -64 -266  IP is onset of photoelectron band.	(212) (889) -40 -166  10.0) (182) (762) -49 -203 82TPIS (183) (764) -49±2 -201±10  IP is onset of photoelectron band (84NOV/POT2, 82LEV/LIA).  2.70±0.1 (115) (481) -109 -455 82EMO/KIE  See also: 82EMO/KIE, 79LEE/POT2. 0 K values.  11.85 210 877 -64 -266 82TN270  IP is onset of photoelectron band.

Table 1. Positive Ion Table - Continued

		ie i. Posit	uea				
ION Neutral	Ionization potentia	-	Ion) i kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
Cl <sub>3</sub> F <sub>3</sub> N <sub>3</sub> P <sub>3</sub> +							
CI P P F  CI P F	(10.76±0.03) IP from 81CLA	(-5) A/SOW.	(-22)	~253	-1060	*EST	25251-05-2
Cl <sub>3</sub> Ga +							10150 00 0
GaCl <sub>3</sub>	11.52	159	664	-107	<del>-448</del>	82TN270	13450-90-3
Cl <sub>3</sub> HSi <sup>+</sup> SiHCl <sub>3</sub>	(11.7)	(155) <i>(156)</i>	(647) (652)	-115 -114	-482 -477	81BEL/PER	10025-78-2
	IP is onset of p				•••		
Cl <sub>3</sub> In <sup>+</sup> InCl <sub>3</sub>	(11.4)	(173) <i>(173)</i>	(722) (724)	−90 <i>−90±2</i>	-378 -376±7	82TPIS	10025-82-8
Cl <sub>3</sub> La <sup>†</sup> LaCl <sub>3</sub>	(10.6) IP is onset of p	(67) hotoelectron	(282) band (83RUS/	-177 GOO).	-741	82TN270	10099-58-8
Cl <sub>3</sub> Li <sub>3</sub> <sup>+</sup>							
qr <sup>Li</sup> ~qi Li <sub>~CI</sub> ,Li	(10.17)	(5) <i>(6)</i>	(19) <i>(26)</i>	-230 - <i>228</i>	-962 -955	82TN270	59217-69-5
Cl <sub>3</sub> Lu <sup>+</sup> LuCl <sub>3</sub>	(11.5±0.5)	(110)	(461)	-155	-649	82TN270	10099-66-8
Cl <sub>3</sub> N+ NCl <sub>3</sub>	(10.12±0.1)	(297)	(1244)	64	268	*EST	10025-85-1
Cl <sub>3</sub> NbO <sup>+</sup> NbOCl <sub>3</sub>	≤12.14	≤100.1 ≤100.8	≤419.0 ≤421.7	-179.8 -179.1	-752.3 -749.6	82TN270	13597-20-1
Cl <sub>3</sub> OP <sup>+</sup> POCl <sub>3</sub>	11.36±0.02	129 <i>130</i>	538 <i>543</i>	-133 -132	-558 -553	82TN270	10025-87-3
Cl <sub>3</sub> OV <sup>+</sup> voc <sub>l3</sub>	(11.6)	(101) (102)	(423) (426)	-166 -166	-696 -693	82TN270	7727-18-6
	IP is onset of pl						

Table 1. Positive Ion Table - Continued

	Table	1. 1031	tive Ion Tabl	e - Com	inued —————		<del></del>
ION Neutral	Ionization potential eV	-	((Ion) ol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
Cl <sub>3</sub> P+							
PCl <sub>3</sub>	9.91	160	667	-69	-289	85JANAF	7719-12-2
	See also: 93070	160	<i>671</i>	-68	-286		
	See also: 83OZC	J, olcha/	rin.				
Cl <sub>3</sub> PS +							
PSCI <sub>3</sub>	9.71±0.03	137	574	-87	-363	71JANAF	3982-91-0
Cl <sub>3</sub> Sb <sup>+</sup>							
SbCl <sub>3</sub>	(10.1±0.1)	(158)	(660)	-75	-314	82TN270	10025-91-9
	IP is onset of ph	otoelectro	n band. See also	: 83OZG.			
Cl <sub>3</sub> Si <sup>+</sup>							
SiCl <sub>3</sub>		(108)	(454)				19165-34-5
	From appearance	e potential	s, 11.91 eV in Si	HCl <sub>3</sub> and 11.	90 eV in CH <sub>3</sub> Si	CI <sub>3</sub> .	
Cl <sub>4</sub> F <sub>2</sub> N <sub>3</sub> P <sub>3</sub> +							
Clapin	(10.48±0.03)	(-53)	(-222)	-295	-1233	*EST	25251-04-1
CI2P N P CI	IP from 81CLA/		( 222)	474	1800	221	<i></i>
F P CI							
Cl <sub>4</sub> Ge <sup>+</sup>							
GeCl <sub>4</sub>	11.68±0.05	(151)	(631)	-119	<del>-</del> 496	82TN270	10038-98-9
		(151)	(633)	-118	-494		
Cl <sub>4</sub> Hf <sup>+</sup>							
HfCl <sub>4</sub>	(11.7)	(59)	(246)	-211	-883	81SPE	13499-05-3
	IP is onset of pho	otoelectron	band.				
Cl <sub>4</sub> Mo+							
MoCl <sub>4</sub>	(10.5±0.1)	(152)	(636)	-90	-377	82TN270	13320-71-3
	IP from 83MAK/	VER.					
Cl <sub>4</sub> Si <sup>+</sup>				•	•		
SiCl <sub>4</sub>	11.79±0.01	126	528	-146	-610	81BEL/PER	10026-04-7
		124	520	-148	-618		
Cl <sub>4</sub> Sn <sup>+</sup>		······	· · · · · · · · · · · · · · · · · · ·			<del> </del>	
SnCl <sub>4</sub>	(11.88±0.05)	(161)	(674)	-113	-472	82TN270	7646-78-8
		(162)	(677)	-112	-469		
Cl <sub>4</sub> Th <sup>+</sup>						<del>`````````````````````</del>	<u> </u>
ThCl <sub>4</sub>	(12.7±0.3)	(62)	(259)	-231	-966	82TN270	10026-08-1
<b>-</b> ₹	. ,	(62)	(260)	-230.8	-965.6		
Cl <sub>4</sub> Ti <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		
TiCl <sub>4</sub>	11.65±0.15	(86)	(361)	-182	-763	85JANAF	7550-45-0
·		(86)	(362)	-182	-762		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H$	(Ion)	ΔεH(N	leutral)	Neutral	CAS registry
Neutral	eV .	-	ol kJ/mol	-	l kJ/mol	reference	number
Cl <sub>4</sub> U+							
UCI <sub>4</sub>	9.18	18	76	-193	-810	82TN270	10026-10-5
Cl <sub>4</sub> V+							
V.CI <sub>4</sub>	(9.2)	(86)	(362)	-126	-526	82TN270	7632-51-1
		(87)	(364)	-125	-524		
	IP is onset of pho	toelectror	ı band.				
CI <sub>4</sub> W <sup>+</sup>							
WC14	(8.0)	(104)	(436)	~80±8	-336±33	85JANAF	13470-13-8
		(104)	(436)	~80±8	<i>−336±33</i>		
Cl <sub>4</sub> Zr <sup>+</sup>							
ZrCi <sub>4</sub>	(11.2)	(50)	(211)	~208	-870	82TN270	10026-11-6
•	, ,	(51)	(212)	-208	<b>-</b> 869		
	IP is onset of photo	toelectron	band.				
Cl <sub>5</sub> Mo <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		
MoCl <sub>5</sub>	(8.7)	(94)	(392)	-107	<b>-448</b>	85JANAF	10241-05-1
-		(94)	(393)	-106	-446		
	IP is onset of photo	toelectron	band.				
Cl <sub>5</sub> Nb <sup>+</sup>						· · · · · · · · · · · · · · · · · · ·	
NbCl <sub>5</sub>	(10.97)	(85)	(355)	-168	-703	85JANAF	10026-12-7
·		(85)	(357)	-168	-701		
Cl <sub>5</sub> P+							
PCI <sub>5</sub>	10.7	(157)	(657)	-90	-375	82TN270	10026-13-8
J		(158)	(662)	<b>-88</b>	-370		
	IP is onset of phot	oelectron	band.				
Cl <sub>5</sub> Re <sup>+</sup>							
ReCl <sub>5</sub>	(9.2)	(136)	(570)	-76	-318	82TN270	13596-35-5
-	IP is onset of phot						
Cl <sub>5</sub> Sb <sup>+</sup>							
SbCl <sub>5</sub>	(10.8)	(155)	(648)	-94	<b>-3</b> 94	82TN270	7647-18-9
3	• •	(155)	(650)	-94	-392		
	IP is onset of phot	oelectron	band (81ELB/I	OIE).			
Cl <sub>5</sub> Ta <sup>+</sup>							<del></del>
TaCl <sub>5</sub>	11.08	73	304	-183	-765	85JANAF	7721-01-9
J		73	306	-182	-763		
Cl <sub>5</sub> W <sup>+</sup>	**					<del></del>	
WCI <sub>5</sub>	(8.5)	(97)	(407)	-99±8	-413±33	85JANAF	13470-14-9
,5	(02)	(98)	(407)	-98±8	-411±33	ta 16 hA	
	IP is onset of phot						

Table 1. Positive Ion Table - Continued

Neutral   eV	ION	Ionization potentia	1 A 77/1		A 77/37			
Classic   Clas		-	_					CAS registry number
P is onset of photoelectron band.   P is onset of photoelectron band.	Cl <sub>6</sub> Ga <sub>2</sub> +							
P is onset of photoelectron band.   P is onset of photoelectron band.	CI\ CI\ O	(11.4)	(30)	(125)	222	075	COTTA TOTA	15051 66 5
9.8    (51)   (213)   -175   -732   69BEN/CRU   940-71-6	Ġá Ġá	• •			-233	<del>-</del> 9/5	821N270	15654-66-7
9.8    (51)   (213)   -175   -732   69BEN/CRU   940-71-6	CIV CIV CI							
Page	Cl <sub>6</sub> N <sub>3</sub> P <sub>3</sub> +			·				
Cl <sub>2</sub> Sl <sub>2</sub> + Si <sub>2</sub> Cl <sub>6</sub> (10.4) (-4) (-16) -244 -1019 81BEL/PER 13465-77.5 See also: 81KHV/ZYK.  Cl <sub>6</sub> W+ WCl <sub>6</sub> (9.5) (83) (347) -136 -570 81WOO 13283-01-7 -137 -573 82TN270 14973-59-2 -14973-59-	Cl <sub>2</sub>	0.8	(51)	(212)	175	722	CODENICDII	040 64 4
Si <sub>2</sub> Cl <sub>6</sub> (10.4) (-4) (-16) -244 -1019 81BEL/PER 13465.77.5  Cl <sub>6</sub> W <sup>+</sup> WCl <sub>6</sub> (9.5) (83) (347) -136 -570 81WOO 13283-01.7  Cl <sub>9</sub> Re <sub>3</sub> + Cl <sub>1</sub> Re <sub>Cl</sub> (8.7) (64) (266) -137 -573 82TN270 14973.59.2  Cl <sub>9</sub> Re <sub>3</sub> + Cl <sub>1</sub> Re <sub>Cl</sub> (8.7) (64) (266) -137 -573 82TN270 14973.59.2  Cm + Cm 6.09±0.02 233 974 92 386 85KLE/WAR 7440.51.9  See also: 81CHE/GAB.  Co 7.864±0.001 283 1184 102 425 82TN270 7440-48.4  282 1182 101 423  See also: 82DYK/GRA.  CoH + (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20.8  Δ <sub>I</sub> H(Ion) from onset of endothermic reaction (86ELK/ARM4).  See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO + COOH 220 920 12314-24-8  Δ <sub>I</sub> H(Ion) from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.	CI2P-N-PCI2						69BEN/CRU	940-71-6
See also: 81KHV/ZYK.	Cl <sub>6</sub> Si <sub>2</sub> +							
WCl6	Si <sub>2</sub> Cl <sub>6</sub>			(-16)	<del>-</del> 244	-1019	81BEL/PER	13465-77-5
ClgRe3 + ClgCl	Cl <sub>6</sub> W <sup>+</sup>							
Cl <sub>p</sub> Re <sub>3</sub> + Cl <sub>p</sub>	wci <sub>6</sub>	(9.5)	(83)	(347)			81WOO	13283-01-7
Co +					-136 	-570		
Cl. Re Cl	Cl <sub>9</sub> Re <sub>3</sub> +							
CI Re CI IP is onset of photoelectron band.  Cm + Cm 6.09±0.02 233 974 92 386 85KLE/WAR 7440.51-9 See also: 81CHE/GAB.  Co + 7.864±0.001 283 1184 102 425 82TN270 7440.48-4 282 1182 101 423 See also: 82DYK/GRA.  CoH + COH (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20-8 Δ <sub>Γ</sub> H/(Ion) from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO + COH	CI CI	(8.7)	(64)	(266)	_137	_573	82TN1270	14072 50 2
Co + Co - 7.864±0.001 283 1184 102 425 82TN270 7440-48-4 282 1182 101 423 See also: 82DYK/GRA.  CoH + CoH + CoH (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20-8 Δ <sub>f</sub> H/(Ion) from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO + CoOH - 220 920 12314-24-8 Δ <sub>f</sub> H/(Ion) from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.	CI. Re CI					5.5	02111270	1471333-2
See also: 81CHE/GAB.  Co	Cm +							
Co + Co 7.864±0.001 283 1184 102 425 82TN270 7440-48-4	Cm			974	92	386	85KLE/WAR	7440-51-9
Co 7.864±0.001 283 1184 102 425 82TN270 7440-48-4 282 1182 101 423  See also: 82DYK/GRA.  CoH (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20-8 ΔfH(Ion) from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO + CoOH 220 920 12314-24-8 ΔfH(Ion) from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.		See also: atCHE	JOAB.					
282   1182   101   423     See also: 82DYK/GRA.     CoH + COH								
See also: 82DYK/GRA.  CoH + CoH (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20-8 $\Delta_f H (\text{Ion})$ from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO+ CoOH 220 920 12314-24-8 $\Delta_f H (\text{Ion})$ from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.  CoO+ CoO 8.9±0.2 (277) (1159) 72±3 301±13 79HUB/HER 1307-96-6	Со	7.864±0.001					82TN270	7440-48-4
CoH (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20-8 $\Delta_f H$ (Ion) from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO + 220 920 12314-24-8 $\Delta_f H$ (Ion) from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.  CoO + 8.9±0.2 (277) (1159) 72±3 301±13 79HUB/HER 1307-96-6		See also: 82DYK		1100	201	420		
CoH (7.3±0.1) (287) (1203) (119) (496) 81ARM/BEA 14994-20-8 $\Delta_f H$ (Ion) from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.  CoHO+  CoOH 220 920 12314-24-8 $\Delta_f H$ (Ion) from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.	CoH+			··································				
$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from onset of endothermic reaction (86ELK/ARM4). See also: 81ARM/HAL. IP from 81ARM/BEA. 0 K values.    CoHO +  CoOH		(7.3±0.1)	(287)	(1203)	(119)	(496)	81ARM/BEA	14994-20-8
CoOH $220$ 920 12314-24-8 $\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values. CoO 8.9±0.2 (277) (1159) 72±3 301±13 79HUB/HER 1307-96-6			nset of endot	hermic reacti	on (86ELK/AR	M4).	,	
$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from photodissociation onset, proton affinity of CoO(84CAS/FRE). 0 K values.  CoO + CoO 8.9 $\pm$ 0.2 (277) (1159) 72 $\pm$ 3 301 $\pm$ 13 79HUB/HER 1307-96-6	Соно+							· · · · · · · · · · · · · · · · · · ·
CoO + CoO 8.9±0.2 (277) (1159) 72±3 301±13 79HUB/HER 1307-96-6	СоОН							12314-24-8
CoO 8.9±0.2 (277) (1159) 72±3 301±13 79HUB/HER 1307-96-6		Δ <sub>f</sub> H(Ion) from p	hotodissociati	ion onset, pro	oton affinity of (	CoO(84CAS/	FRE). 0 K values.	
CoO 8.9±0.2 (277) (1159) 72±3 301±13 79HUB/HER 1307-96-6	C <sub>0</sub> O <sup>+</sup>						To a trace while the second of the trace	<u></u>
$\Delta_{ m f}$ H(Ion) from 81ARM/HAL, 82ARM/HAL. See also: 81KAP/STA. 0 K values.								1307-96-6
		Δ <sub>f</sub> H(Ion) from 8	1ARM/HAL,	82ARM/HA	L. See also: 81K	AP/STA. 0 I	Cvalues.	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
Cr <sup>+</sup> Cr	6.766	250.8 250.3	1049.4 1047.3	94.8 <i>94.3</i>	396.6 <i>394.5</i>	82TN270	7440-47-3
CrF <sup>+</sup>	(8.4±0.3)	(199)	(831)	5	21	81WOO	13943-42-5
CrF <sub>2</sub> + CrF <sub>2</sub>	(10.1±0.3)	(181)	(758)	-52	-216	81W00	10049-10-2
CrF <sub>3</sub> +	(12.2±0.3)	(124)	(517)	-158	-660	81WOO	7788-97-8
CrH <sup>+</sup> CrH	Δ <sub>f</sub> H(Ion) from on 0 K values.	<i>(274)</i> uset of end	(1145) Iothermic reacti	on (86ELK/AF	RM). See also: 8	BIARM/HAL.	13966-79-5
CrO <sup>+</sup> CrO	7.85±0.02  IP from 83DYK/0  See also: 81BAL/0			52±7 <i>49±3</i> m 81ARM/HA	218±29 <i>203±12</i> L, 82ARM/HA	83PED/MAR	12018-00-7
CrO <sub>2</sub> + CrO <sub>2</sub>	(10.3±0.5) 0 K values.	(223)	(935)	-14	-59	82TN270	12018-01-8
CrO <sub>2</sub> P + CrPO <sub>2</sub>	(8.0±0.5) IP from 81BAL/C	<i>(236)</i> SIG. 0 K va	<i>(989)</i> alues.	52±3	218±13	81BAL/GIG	
CrO <sub>3</sub> + CrO <sub>3</sub>	(11.6±0.5)	(175)	(733)	-92	-386	82TN270	1333-82-0
Cs <sup>+</sup>	3.894 See also: 84.45.4.7	108.0 108.3	451.8 453.3	18.2 18.5	76.1 77.6	82TN270	7440-46-2
	See also: 84ASA/	1 A3, 833(					
CsF + CsF	(8.80±0.10)	(117) <i>(117)</i>	(488) <i>(490)</i>	-86 -85.8±1.8	~361 ~359.0±7.5	84PAR/WEX	13400-13-0
CsHO <sup>+</sup> CsOH	(7.3±0.15)	(106)	(445)	-62	-259	81LIN/BES	21351-79-1
CsH <sub>2</sub> O <sup>+</sup> CsOH <sub>2</sub>	$\Delta_{ m f} H$ (Ion) from eq	36 uilibrium	149 constant detern	nination (69SE	A/DZI).		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	$\Delta_{\mathbf{f}}H(Ne$	utral)	Neutral	CAS registry
Neutral	eV	-	kJ/mol	kcal/mol		reference	number
CsI+							
CsI	7.10±0.05	127	531	-37	-154	84PAR/WEX	7789-17-5
		128	535		−150±14		
	See also: 82EMO	/HOR, 82L	EL/BAL, 84V	/IS/HIL.			
CsK+							
KCs	(3.9±0.1)	(119)	(498)	(29)	(122)	79HUB/HER	
	IP from 85KAP/S	CH. 0 K val	ues.				
CsLi <sup>+</sup>							· · · · · · · · · · · · · · · · · · ·
LiCs	(4.1±0.1)	(134)	(562)	(40)	(166)	79HUB/HER	12018-59-6
	IP from 85KAP/S	CH. 0 K val	ues.				
CsNa <sup>+</sup>							
NaCs	(4.05±0.04)	(128)	(535)	(35)	(144)	79HUB/HER	12018-60-9
	IP from 85KAP/S			• •	• •	<del>                                </del>	
CsO+							
CsO	6.22	153.6	642.8	10.2	42.7	82TPIS	24774-39-8
		154.1	644.9	10.7±5	44.8±21		
	IP from 84BUT/K	UD.					
CsRb <sup>+</sup>							-
RbCs	3.7±0.1	96	401	11	44	86IGE/WED	12331-83-8
	IP from 85KAP/S	СН.					
Cs <sub>2</sub> +							
Cs <sub>2</sub>	3.7±0.1	(111)	(464)	26±0.1	107±0.3	85JANAF	12184-83-7
-		(112)	(469)	27±0.1	112±0.3		
	IP from 85KAP/R	AD, 85KAP	/SCH. See al	lso: 83HEL/MO	L.		
Cs <sub>2</sub> MoO <sub>4</sub> +			· · · · · · · · · · · · · · · · · · ·				
Cs <sub>2</sub> MoO <sub>4</sub>	(7.0)	(-114)	(~479)	-276	-1154	81LIN/BES	
Cs <sub>2</sub> O +							
Cs <sub>2</sub> O	4.41±0.03	(80)	(333)	-22	-92	81LIN/BES	20281-00-9
2	IP from 77ROS/D				72	OTEN VIDES	20201-00-9
Cu <sup>+</sup>							
Cu	7.72634±0.00002	259.0	1083.8	80.9	338.3	82TN270	7440-50-8
		<u>258.8</u>	1082.7	80.6	<i>337.2</i>	021112/0	/ <del>***</del> U•JU•0
CuF+							
CuF	10.15±0.02	(235)	(984)	1	5	81WOO	13478-41-6
		(231)	<i>(967)</i>		-12	3130	-0170-1470
	IP from 80DYK/FA						
CuF <sub>2</sub> +			<del></del>				
CuF <sub>2</sub>	(12.7)	(229)	(958)	-64	-267	81WOO	7789-19-7
<b>-</b>	` '		(960)		-265	U2 00	
	IP is onset of photo						

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Id kcal/mol		Δ <sub>f</sub> H(New kcal/mol		Neutral reference	CAS registry number
•							
CuH + CuH	(9.5) Δ <sub>f</sub> H(Ion) from on Δ <sub>f</sub> H(Ion) - Δ <sub>f</sub> H(N			<i>70</i> n (86ELK/AR	<i>291</i> LM4). IP is	79HUB/HER	
CuO+							
ĊuO	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from (8)	(286±8) IKAP/STA	(1197±33) .). Ion/molecule	73±10 bracketing re	306±41 sults.	85JANAF	1317-38-0
CuSn +							
CuSn	(7.2±1.0) 0 K values.	(277)	(1161)	111	466	79HUB/HER	12054-11-4
Cu <sub>2</sub> +							
Cu <sub>2</sub>	7.894±0.015	298 <i>298</i>	1247 - 1247	116 <i>116</i>	485 <i>485</i>	85JANAF	12190-70-4
	IP from 83POW/F	IAN.					
<b>p</b> +							
D	13.602	<u>366.6</u> <u>366.2</u>	<u>1534.0</u> <u>1532.1</u>	52.98 <i>52.52</i>	221.67 <i>219.76</i>	82TN270	16873-17-9
DH+							
HD	15.44477±0.00007	356.2 356.2	<u>1490.5</u> <u>1490.5</u>	.077 .079	.32 .33	85JANAF	13983-20-5
DLi+	Anna ann ann an Ann						
LiD	7.7±0.1	(211) (211)	(884) <i>(884)</i>	33.7 <i>33.7</i>	141.1 <i>141.1</i>	82TN270	13587-16-1
D <sub>2</sub> +				· · · · · · · · · · · · · · · · · · ·			
D <sub>2</sub>	15.46660±0.0001	<u>356.7</u>	<u>1492.2</u>	0	0	*DEF	7782-39-0
	IP from 79HUB/H	<u>356.7</u> IER.	<u>1492.2</u>	0	0		
D <sub>2</sub> O+							
D <sub>2</sub> O	12.635±0.007	231.8 232.5	970.0 972.8	-59.56 -58.85	-249.20 -246.25	85JANAF	7789-20-0
D <sub>3</sub> O +							
D <sub>3</sub> O	4.3±0.1 IP from 84GEL/P	OR.					24847-51-6
Dy <sup>+</sup>							
Dy	5.9390±0.0006	206 <i>207.0</i>	863 <i>866.1</i>	69 <i>70.0</i>	290 <i>293.1</i>	82TN270	7429-91-6
DyF+	A ALAMANA						
DyF	(6.0±0.3) 0 K values.	(101)	(422)	<i>-38</i>	-157	79HUB/HER	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> <i>H</i> (Ne	utral)	Neutral	CAS registry		
Neutral	eV	Δ <sub>f</sub> H(Id kcal/mol		kcal/mol		reference	number
DyO <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		
DyO	(6.08±0.1)	(122) <i>(121)</i>	(512) <i>(508)</i>	-18±10 - <i>19</i>	-75±42 - <i>79</i>	83PED/MAR	12175-28-9
Er+						<u> </u>	
Er	6.1077±0.0006	217 <i>216.9</i>	906 <i>907.6</i>	76 76.1	317 <i>318.3</i>	82TN270	7440-52-0
ErF+							***************************************
ErF	(6.3±0.3) 0 K values.	(105)	(441)	<del>-</del> 40	-167	79HUB/HER	
ErF <sub>2</sub> +						······································	
ErF <sub>2</sub>	(7.0±0.3)	(-3)	(-11)	-164	-686	82TN270	
ErI3 <sup>+</sup>						***************************************	
ErI <sub>3</sub>	9.0 IP is onset of pho	125 toelectron b	524 and (83RUS/	-82 GOO).	-344	82TN270	13813-42-8
ErO+		····					
ErO	(6.30±0.1)	(135) <i>(132)</i>	(566) <i>(554)</i>	−10±5 <i>−13</i>	-42±21 - <i>54</i>	83PED/MAR	12280-61-4
	See also: 80MUR		(334)	-13	-54		
Es+	·············						<del> </del>
Es	6.52±0.10	182	762	31.8±3	133±13	85KLE/WAR	7429-92-7
		***********					
Eu	5.67045±0.0003	172 173.1	722 724.2	42 42.3	175 177.1	82TN270	7440-53-1
EuO+							
EuO	(6.48±0.1) See also: 81BAL/0	(139) GIG, 85BAI	(582) ./GIG.	-10	<b>-43</b>	83PED/MAR	12020-60-9
EuO <sub>2</sub> V <sup>+</sup>							
EuVO <sub>2</sub>	(8) IP from 83BAL/G	<i>(108)</i> iIG. 0 K valu	<i>(450)</i> ies.	-77	-322	83BAL/GIG	88762-30-5
EuO <sub>3</sub> Ti <sup>+</sup>						· · · · · · · · · · · · · · · · · · ·	· · · - · · · · · · · · · · · · · · · ·
EuTiO <sub>3</sub>	(6.5±0.5) IP from 85BAL/G		(-260)	-212±7	-887±28	85BAL/GIG	12020-61-0
EuO <sub>3</sub> V+					······································		
EuVO <sub>3</sub>	8.1±0.5 IP from 83BAL/G	<i>(4)</i> IG. 0 K valu	<i>(17)</i> es.	(-183)	(-764)	83BAL/GIG	39432-21-8
EuS+				<u></u>			
EuS	(6.8±0.3)	(184) <i>(180)</i>	(769) <i>(751)</i>	27 23	113 <i>95</i>	82TN270	12020-65-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	Ion) i kJ/moi	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
F+ F	17.422	420.7 420.2	1760.2 1758.2	19.0±0.1 18.5±0.1	79.4±0.3 77.4±0.3	85JANAF	14762-94-8
FGn + GaF	(9.6±0.5)  A value of 10.7±0.	(167) <i>(167)</i> .6 eV has a	(699) (700) Ilso been repor	–54 –54 ted for this ioni:	-227 -226 zation potentia	79HUB/HER	13966-78-4
FGe <sup>+</sup> GeF	7.46 IP from 79HUB/I	166 <i>166</i> HER.	694 694	-6 -6	-26 -26	81WOO	14929-46-5
FH <sup>+</sup> HF	16.044±0.003  See also: 81KIM/I	304.9 <i>304.9</i> KAT, 81BI	1275.5 1275.5 1275.5 E/ASB.		−272.5±0.8 −272.5±0.8	85JANAF	7664-39-3
FHO <sup>+</sup>	12.71±0.01	270	1128	-23±1	-98±4	82BAU/COX	14034-79-8
FH <sub>2</sub> <sup>+</sup> н <sub>2</sub> F		184	767				
	From proton affin derived from the a 489.5 kJ/mol.						
FH <sub>3</sub> Si <sup>†</sup> SiH <sub>3</sub> F	derived from the	(180)	e potential of the				13537-33-2
SiH <sub>3</sub> F	derived from the a 489.5 kJ/mol.	(180)	e potential of the	is ion from (H	F) <sub>2</sub> . PA = 117	kcal/mol,	13537-33-2
SiH <sub>3</sub> F FHo <sup>+</sup> HoF	derived from the a 489.5 kJ/mol.  11.7 IP is onset of phot  (6.1±0.3)	(180) toelectron (103) 222.2 222.7	(752)	uis ion from (HI -90±5	-377±21 -158 -94.8±3.8	kcal/mol, 78JANAF	
SiH <sub>3</sub> F  FHo +  HoF  FI +  IF	derived from the a 489.5 kJ/mol.  11.7 IP is onset of phot  (6.1±0.3) 0 K values.	(180) toelectron (103) 222.2 222.7	(752) band. (431)	-90±5 -38 -22.7±0.9	-377±21 -158 -94.8±3.8	78JANAF 79HUB/HER	16087-66-4
FHo+ HoF  FI+ IF	derived from the a 489.5 kJ/mol.  11.7 IP is onset of phot  (6.1±0.3) 0 K values.  10.62 IP from 84DYK/J  (9.6±0.5)	(180) toelectron (103) 222.2 222.7 OS.	(752) band. (431) 929.9 931.8	-90±5 -38 -22.7±0.9 -22.2±0.9	-377±21 -377±21 -158 -94.8±3.8 -92.9±3.8	78JANAF 79HUB/HER 85JANAF	16087-66-4 13873-84-2

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Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
FMo <sup>+</sup>				<del></del>			
MoF	(8.0±0.3)	(249)	(1044)	65	272	81WOO	60388-18-3
N+							
NF	12.26±0.01 IP from 82DYI	<i>338</i> fH(Io	1415 on) from 84B	<i>55.5±0.5</i> ER/GRE. See a	<i>232.2±2.1</i> lso: 79DUD/I	84BER/GRE BAL. 0 K values.	13967-06-1
PNO+							<u></u>
NOF	12.63±0.03	275 276	1152 <i>1154</i>	-16 16	-67 -65	82TN270	7789-25-5
rNO <sub>2</sub> +						*	
NO <sub>2</sub> F	(13.09)	(276) (277)	(1154) <i>(1160)</i>	-26±5 -25±5	-109±21 -103±21	85JANAF	10022-50-1
rns+							
NSF	11.51±0.04	260	1090	-5±0.9	-21±4	73LAR/JOH	18820-63-8
FNa <sub>2</sub> +							
Na <sub>2</sub> F	4.0±0.1 IP from 85KAP	5 /RAD. 0 K val	<i>20</i> ues.	-87±3	−366±13	85KAP/RAD	87331-13-3
'Nd <sup>+</sup>					·····	<del></del>	
FNd	(5.0±0.3) A 298 K heat of or -159 kJ/mol,						
*O							
O <sup>+</sup> OF	12.77	320 <i>320</i>	1341 <i>1341</i>	26±2 26	109±8 109	82BAU/COX	12061-70-0
OF	12.77					82BAU/COX	12061-70-0
OF	12.77 (12.6±0.2)					82BAU/COX 85JANAF	12061-70-0 15499-23-7
OF O <sub>2</sub> + O <sub>2</sub> F		320 (294)	1341 (1229)	26 3±0.5	109 13±2	·	- <del> </del>
OF CO <sub>2</sub> + O <sub>2</sub> F		(294) (294) (294)	(1229) (1230) (≤887)	26 3±0.5 3±0.5 -12.5±5	109 13±2 14±2 -52±21	·	- <del> </del>
OF O <sub>2</sub> + O <sub>2</sub> F	(12.6±0.2) (≤9.74±0.01)	(294) (294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) tential deterr	26 3±0.5 3±0.5 -12.5±5 -12±5	109 13±2 14±2 -52±21 -51±21	85JANAF	15499-23-7 16027-92-2
OF CO2+ O2F P+ PF	(12.6±0.2) (≤9.74±0.01) Δ <sub>f</sub> H(Ion) from :	(294) (294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) tential deterr	26 3±0.5 3±0.5 -12.5±5 -12±5	109 13±2 14±2 -52±21 -51±21	85JANAF 85JANAF	15499-23-7 16027-92-2
OF CO2+ O2F P+ PF	(12.6±0.2) (≤9.74±0.01) Δ <sub>f</sub> H(Ion) from :	(294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) tential deterr	26 3±0.5 3±0.5 -12.5±5 -12±5 ninations (84BB	109 13±2 14±2 -52±21 -51±21	85JANAF 85JANAF	15499-23-7 16027-92-2
FO <sub>2</sub> + O <sub>2</sub> F  SP+ PF	(12.6±0.2) (≤9.74±0.01) Δ <sub>f</sub> H(Ion) from see also: 75TOF	(294) (294) (≤212) (≤212) appearance po VWES, 82LEV	(1229) (1230) (≤887) (≤888) tential deterr //LIA.	26 3±0.5 3±0.5 -12.5±5 -12±5 ninations (84BE	13±2 14±2 -52±21 -51±21 ER/GRE). IP	85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2
OF  O2+ O2F  P+ PF  Pb+ PbF	(12.6±0.2) (≤9.74±0.01) Δ <sub>f</sub> H(Ion) from see also: 75TOF	(294) (294) (≤212) (≤212) appearance po V/WES, 82LEV (154) (154)	(1229) (1230) (≤887) (≤888) tential deterr //LIA.	26 3±0.5 3±0.5 -12.5±5 -12±5 ninations (84BE	13±2 14±2 -52±21 -51±21 ER/GRE). IP	85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	_	l(Ion) ol kJ/mol	Δ <sub>f</sub> H(No kcal/mol		Neutral reference	CAS registry number			
FS <sub>2</sub> +										
SSF	_	194	811							
	From appearance	potentia	I determinations	(85LOS/WIL)						
FSi <sup>+</sup>										
SiF	7.28	163	682	<b>-</b> 5±6	-20±25	83WAL	11128-24-8			
•	IP from 79HUB/F	<i>166</i> JER	680	-5±6	-22±25					
	11 110111 //11010/1									
FSm +										
SmF	(5.7±0.3)	(68)	(286)	-63	<b>-264</b>	79HUB/HER	17209-59-5			
		(73)	(307)	<i>-58</i>	-243					
FSn <sup>+</sup>										
SnF	(7.04)	(142)	(593) -	-21	-86	81WOO	13966-74-0			
FSr <sup>+</sup>										
SrF	(5.0±0.3)	(45)	(188)	-70.4±2.0	-294.6±8.4	85JANAF	13569-27-2			
		(45)	(189.5)	-70.0±2.0	-292.9±8.4					
FTI <sup>+</sup>										
TIF	10.52	199	833	-43	-182	82TN270	7789-27-7			
		199	833	-43	-182					
FW <sup>+</sup>							· · · · · · · · · · · · · · · · · · ·			
WF	(8.5±1)	(282)	(1180)	86	360	81WOO	51621-16-0			
<b>1</b>										
FXe +	(10.0)	(0.50)	(40.00)	444						
XeF	(10.3) Δ <sub>f</sub> H(Ion) from ap	<i>(252)</i> nearance	(1057)	15.3	64.0	79HUB/HER	16757-14-5			
	IP is $\Delta_f H(Ion) - \Delta_f$		-							
FY+							<del></del>			
YF	(6.3±0.3)	(121)	(507)	-24	-101	79HUB/HER	12001 00 0			
••	0 K values.	(121)	(307)	-24	-101	/9HOB/HER	13981-88-9			
- L					<del></del>					
F2 +	15 (07.0 000	262.0	15145	•	•	*555				
F <sub>2</sub>	15.697±0.003	362.0 <i>362.0</i>	1514.5 <i>1514.5</i>	0	0	*DEF	7782-41-4			
	IP from 84VAN/D			OS, 81KIM/KA	T, 81BIE/ASE	<b>3.</b>				
2 12 . #										
F <sub>2</sub> Fe <sup>+</sup> FeF <sub>2</sub>	(11.3±0.3)	(177)	(740)	-84	_350	0133700	7700 00 0			
1012	(11.5±0.5)	(177)	(741)	-64 -83	-350 -349	81WOO	7789-28-8			
•		·- ·-/								
F2Ge+	/44 /PN	44.50	(88-1							
GeF <sub>2</sub>	(11.65) IP from 82JON/VA	(132) N3	(551)	-137	-573	81WOO	13940-63-1			
		11 13.								
F <sub>2</sub> HN <sup>+</sup>										
HNF <sub>2</sub>	(11.53±0.08)	(250)	(1047)	-16±1	-65±6	69PAN/ZER	10405-27-3			

Table 1. Positive Ion Table - Continued

ION	Ionization potenti	al ∆ <sub>f</sub> H(Io	on)	$\Delta_{\rm f}H$ (No	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
F <sub>2</sub> HO <sub>2</sub> S <sup>+</sup>							
F <sub>2</sub> SOOH		38	159				
	From proton a	_	_				
	re-evaluated re	elative to CO s	tandard (84LI	a/Lie). Pa =	146.2 kcal/mo	l,	
	612. kJ/mol.						
F <sub>2</sub> H <sub>2</sub> Si <sup>+</sup>		· · · · · · · · · · · · · · · · · · ·					
SiH <sub>2</sub> F <sub>2</sub>	12.2	(92)	(386)	-189±5	-791±21	85JANAF	13824-36-7
		(94)	(395)	<i>−187±5</i>	-782±21		
	IP is onset of p	hotoelectron b	and.				
F <sub>2</sub> IP+							
PF <sub>2</sub> I+	(9.8)	(84)	(350)	-142.3±1	-595.4±4.2	84BER/GRE	13819-11-9
2	IP is onset of p				575112112	0.2214.01	10017 11 7
r v.+					<del></del>		
F <sub>2</sub> Kr <sup>+</sup>	13.1±0.05	217	1325	14±0.7	60±3	67GUN	12772 04 4
KrF <sub>2</sub>	15.1±0.05	317	1323	14±0.7	00±3	67GUN	13773-81-4
F <sub>2</sub> Mg <sup>+</sup>							
MgF <sub>2</sub>	(13.4±0.4)	(136)	(569)	-173	-724	82TN270	7783-40-6
		(137)	(571)	-172	-722		
F <sub>2</sub> Mn <sup>+</sup>							
MnF <sub>2</sub>	(11.4)	(137)	(575)	-125	-525	81WOO	7782-64-1
		· · · ·					
F <sub>2</sub> Mo <sup>+</sup>							
MoF <sub>2</sub>	(9.00±0.15)	(167)	(700)	<del>-4</del> 0	-168	81WOO	20205-60-1
F <sub>2</sub> MoO <sub>2</sub> +			<del>-,,-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>				
$MoO_2F_2$	(13.0±0.3)	(56)	(236)	-243	-1018	81WOO	13824-57-2
	` ′						
F <sub>2</sub> N <sup>+</sup>							
NF <sub>2</sub>	11.628±0.01	275	1153	8	31	84BER/GRE	3744-07-8
	ID 6 04DFD	276.5	1156.8	8.3	34.9		
	IP from 84BER	VGICE. See als	0: /9DUD/BF	\L			
F <sub>2</sub> NS <sup>+</sup>							
NSF <sub>2</sub>		253	1060				
-	From appearan	ce potential (1	5.47 eV) in NS	SF <sub>3</sub> .			
E.N. +							
F <sub>2</sub> N <sub>2</sub> +	(12.0)	(215)	(1216)	10.1	01±¢	OCTABIATE	12776 62 0
(E)-N <sub>2</sub> F <sub>2</sub>	(12.8)	(315) <i>(316)</i>	(1316) <i>(1321)</i>	19±1 <i>21±1</i>	81±5 <i>86±5</i>	85JANAF	13776-62-0
	<u> </u>	(510)	(2021)	wz			
F <sub>2</sub> Nd <sup>+</sup>							
F <sub>2</sub> Nd	(5.6±0.3)	(-29)	(-120)	-158	-660	81WOO	
F-0+							
F <sub>2</sub> O +	13.11±0.01	308	1290	5.9±0.4	24.5±1.6	85JANAF	7783-41-7
OF <sub>2</sub>							

Table 1. Positive Ion Table - Continued

Ionization potential eV  12.25  See also: 81COS  13.04±0.01  (12.5±0.3) IP from 81MAL  8.847±0.010 IP from 84BER/0  (11.5) IP is onset of pho	(164) (166) (766) (7LLO. 119 121 (70) /MEL. 90 90 GRE. See a	(677) (681)	-118±8 -117±8 -181±2 -179±2 -219 -115±0.5 -114.4±0 ES, 82LEV/LI	-494±32 -489±32 -759±8 -750±8 -915 -482±2.1 -25 -478.6±2.1	Neutral reference  87HER  87HER  81WOO  84BER/GRE	CAS registry number 7783-42-8 2699-79-8 14118-73-1
See also: 81COS, 13.04±0.01  (12.5±0.3) IP from 81MAL/ 8.847±0.010 IP from 84BER/6	(166) S/LLO. 119 121 (70) /MEL. 90 90 GRE. See a (162) (163)	(693) 499 508 (291) 378.5 375 also: 75TOR/W	-117±8  -181±2 -179±2  -219  -115±0.5 -114.4±0  ES, 82LEV/LI  -103	-489±32  -759±8  -750±8  -915  -482±2.1  25 -478.6±2.1	87HER 81WOO	2699-79-8 14118-73-1
13.04±0.01  (12.5±0.3)  IP from 81MAL/  8.847±0.010  IP from 84BER/0  (11.5)	119 121 (70) /MEL. 90 90 GRE. See a	508 (291) 378.5 375 also: 75TOR/W	-179±2 -219 -115±0.5 -114.4±0 ES, 82LEV/L1	-750±8 -915 -482±2.1 -478.6±2.1	81WOO	14118-73-1
(12.5±0.3) IP from 81MAL/ 8.847±0.010 IP from 84BER/0	(70) /MEL.  90 90 GRE. See (162) (163)	508 (291) 378.5 375 also: 75TOR/W	-179±2 -219 -115±0.5 -114.4±0 ES, 82LEV/L1	-750±8 -915 -482±2.1 -478.6±2.1	81WOO	14118-73-1
(12.5±0.3) IP from 81MAL/ 8.847±0.010 IP from 84BER/0	(70) /MEL.  90 90 GRE. See (162) (163)	508 (291) 378.5 375 also: 75TOR/W	-179±2 -219 -115±0.5 -114.4±0 ES, 82LEV/L1	-750±8 -915 -482±2.1 -478.6±2.1	81WOO	14118-73-1
IP from 81MAL/ 8.847±0.010 IP from 84BER/6	90 90 GRE. See 4 (162) (163)	378.5 375 also: 75TOR/W (677) (681)	115±0.5 114.4±0 ES, 82LEV/LI 103	-482±2.1 25 -478.6±2.1 A.		
IP from 81MAL/ 8.847±0.010 IP from 84BER/6	90 90 GRE. See a (162) (163)	378.5 375 also: 75TOR/W (677) (681)	115±0.5 114.4±0 ES, 82LEV/LI 103	-482±2.1 25 -478.6±2.1 A.		
IP from 84BER/0	90 GRE. See : (162) (163)	375 also: 75TOR/W (677) (681)	-114.4±0 ES, 82LEV/LI -103	2.5 -478.6±2.1 A.	84BER/GRE	13873-52-4
IP from 84BER/0	90 GRE. See : (162) (163)	375 also: 75TOR/W (677) (681)	-114.4±0 ES, 82LEV/LI -103	2.5 -478.6±2.1 A.	84BER/GRE	13873-52-4
(11.5)	(162) <i>(163)</i>	(677) (681)	-103			<del></del>
	(163)	(681)		_432		
	(163)	(681)		_432		
IP is onset of pho					81WOO	7783-46-2
		band(83NOV/	<i>–102</i> POT2).	<b>-</b> 429		
	<del></del>					
(11.85±0.25) IP from 83KOR/I	(247) BON.	(1032)	<b>-</b> 26±6	-111±25	83KOR/BON	18820-56-9
(10.08)	(161) (162)	(676) (678)	-71±4 -70±4	−297±17 <i>−295±17</i>	87HER	13814-25-0
See also: 80GOM	M/HAA, 85	LOS/WIL.		<del></del>	· · · · · · · · · · · · · · · · · · ·	
10.62±0.02	176	739	-68±2	-286±10	87HER	13709-35-8
IP from 85LOS/V	<i>17</i> 7 WIL.	742	-67±2	−283±10		
10.41±0.02	169	707	-71±2	-297±10	87HER	101947-30-2
IP from 85LOS/V	WIL. See al	so: 84COO/KR	O, 82LEV/LIA	<b>4.</b>		
10.78±0.05	(108) <i>(108)</i>	(450) <i>(451)</i>	-141±2 -141±2	-590±8 -589±8	83WAL	13966-66-0
(11.1) IP is onset of pho	(140) otoelectron	(586) band (83NOV/	-116 POT2).	<b>-</b> 485	81WOO	7783-47-3
		/CO.13	484		0411100	13814-20-5
	10.41±0.02 IP from 85LOS/0  10.78±0.05  (11.1) IP is onset of pho	IP from 85LOS/WIL.  10.41±0.02 169 IP from 85LOS/WIL. See al  10.78±0.05 (108) (108)  (11.1) (140) IP is onset of photoelectron	IP from 85LOS/WIL.  10.41±0.02 169 707 IP from 85LOS/WIL. See also: 84COO/KR0  10.78±0.05 (108) (450) (108) (451)  (11.1) (140) (586) IP is onset of photoelectron band (83NOV/I	IP from 85LOS/WIL.  10.41±0.02 169 707 -71±2 IP from 85LOS/WIL. See also: 84COO/KRO, 82LEV/LIA  10.78±0.05 (108) (450) -141±2 (108) (451) -141±2  (11.1) (140) (586) -116 IP is onset of photoelectron band (83NOV/POT2).	IP from 85LOS/WIL.  10.41±0.02 169 707 -71±2 -297±10 IP from 85LOS/WIL. See also: 84COO/KRO, 82LEV/LIA.  10.78±0.05 (108) (450) -141±2 -590±8 (108) (451) -141±2 -589±8  (11.1) (140) (586) -116 -485 IP is onset of photoelectron band (83NOV/POT2).	IP from 85LOS/WIL.  10.41±0.02 169 707 -71±2 -297±10 87HER IP from 85LOS/WIL. See also: 84COO/KRO, 82LEV/LIA.  10.78±0.05 (108) (450) -141±2 -590±8 83WAL (108) (451) -141±2 -589±8  (11.1) (140) (586) -116 -485 81WOO IP is onset of photoelectron band (83NOV/POT2).

Table 1. Positive Ion Table - Continued

**************************************	Laul	e 1. Pusitiv	C TOIL TADI	- Contin			
ION Neutral	Ionization potential eV	l ∆ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
F <sub>2</sub> W <sup>+</sup>				, ,,,,,,,,			
WF <sub>2</sub>	(9.0±0.3)	(182)	(763)	-25	-105	81WOO	33963-15-4
F <sub>2</sub> Xe <sup>+</sup>							
XeF <sub>2</sub>	12.35±0.01	259	1085	-26±0.2	-107±1	72JOH/MAL	13709-36-9
F <sub>2</sub> Zr <sup>+</sup>							
F <sub>2</sub> Zr	(12.0±0.5)	(143) <i>(144)</i>	(600) (602)	-133±5 -133±5	-558±21 -556±21	85JANAF	13842-94-9
F <sub>3</sub> Fe <sup>+</sup>							
FeF <sub>3</sub>	(12.5±0.3)	(101) <i>(101)</i>	(421) <i>(424)</i>	-188 - <i>187</i>	-785 -782	81WOO	7783-50-8
F <sub>3</sub> HN <sup>+</sup>							
F <sub>2</sub> NFH		199	832				
	From proton aff CO standard (84					ed relative to	
F <sub>3</sub> HOP <sup>+</sup>			<del></del>		· · · · · · · · · · · · · · · · · · ·		
P(OH)F <sub>3</sub>	From proton aff	–91 inity of POF <sub>3</sub>	-383 (RN 13478-2	0-1). PA = 16°	7.8 kcal/mol, 7	02. kJ/mol.	
F <sub>3</sub> HP <sup>+</sup>							
HPF <sub>3</sub>		-20	-86				
	From proton aff	inity of PF <sub>3</sub> (	RN 7783-55-3	). $PA = 166.5$	kcal/mol, 697.	kJ/mol.	
F <sub>3</sub> HSi <sup>+</sup>				· · · · · ·			
SiHF <sub>3</sub>	(14.0)	(36)	(150)	-287±5	-1201±21	85JANAF	13465-71-9
	IP is onset of ph	(37) otoelectron b	<i>(157)</i> and.	-285±5	−1194±21		
						· · ·	
F <sub>3</sub> H <sub>2</sub> OSi <sup>+</sup>							
SiF <sub>3</sub> OH <sub>2</sub>	From proton aff		(-1103) H (84REE/N	III). PA = (1	62) kcal/mol.	(676) kI/mol.	
	2 Tom proton un.						
F <sub>3</sub> Mn <sup>+</sup>				•			
MnF <sub>3</sub>	(12.57±0.2)	(104)	(434)	-186	-779	81WOO	7783-53-1
F <sub>3</sub> Mo <sup>+</sup>							
MoF <sub>3</sub>	(9.88±0.10)	(87)	(361)	-141	-592	81WOO	20193-58-2
		(87)	(364)	-141	-589		
F <sub>3</sub> MoS <sup>+</sup>							
MoSF <sub>3</sub>	(13.0±0.3)	(134)	(559)	-166±6	-695±27	80MAL/ALI	67374-76-9
•	IP from 80MAL						
F <sub>3</sub> N <sup>+</sup>							
NF <sub>3</sub>	13.00±0.02	268	1122	-31±0.3	-132±1	85JANAF	7783-54-2
<b>-</b>		270	1128	-30±0.3	-126±1		
	See also: 84BER	/GRE, 84BEI	R/GRE2, 79D	UD/BAL.			

Table 1. Positive Ion Table - Continued

Ionization potential eV	•		•		Neutral reference	CAS registry
		· · · · · · · · · · · · · · · · · · ·				
13.26±0.01	(267) <i>(269)</i>	(1116) <i>(1124)</i>	-39±5 -37±5	-163±21 -155±21	85JANAF	13847-65-9
(12.0) IP is onset of pho	(192) otoelectron b	(802) and.	-85±0.5	-356±2	70O'H/HUB	15930-75-3
12.76±0.01	(-5)	(-23)	-300±2	-1254±8	85JANAF	13478-20-1
See also: 83NES/		(-14)	−298±2	<i>−1245±8</i>		
					***************************************	
(13.88±0.05)	(25)	(105)	-295.0±7.0	) -1234±29	75FLE/SVE	13709-31-4
11.44	(35)	(146)	-229±1	-958±4	85JANAF	7783-55-3
IP from 84BER/C					•	
≤11.05±0.035	(≤14)	(≤57)	-241±15	-1009±63	85JANAF	2404-52-6
	(≤16)	(≤65)	-239±15	-1001±63		
(12.1) IP is onset of pho	(80) toelectron ba	(334) and(83NOV/	−199 POT).	-833	81WOO	7783-56-4
•						
(9.3)	(-24)	(-99)	-239±5	-1000±21	83WAL	
	(-23)	(-96)	<i>−238±5</i>	-996±21		
From appearance	potential (13	3.33 eV) in C	$H_3$ Si $F_3$ . IP is $\triangle$	<sub>f</sub> H(Ion) - ∆ <sub>f</sub> H	(Neutral).	
(10.5±0.5)			-278	-1164	81WOO	7783-57-5
	( <del>-</del> 35)	(-147) 	-277	-1160		
(9.0±0.2)	(81)	(337)	-127	-531	81WOO	51621-17-1
<b>"</b>	234	981	_			
From appearance	potential (13	3.10 eV) in X	eF <sub>4</sub> .			
(15.5)	(73)	(306)	<b>-2</b> 84	-1190	81WOO	7783 <b>-5</b> 8-6
	eV  13.26±0.01  (12.0) IP is onset of pho  12.76±0.01  See also: 83NES/  (13.88±0.05)  11.44  IP from 84BER/C  ≤11.05±0.035  (12.1) IP is onset of pho  (9.3)  From appearance  (10.5±0.5)  (9.0±0.2)	eV kcal/mol  13.26±0.01 (267) (269)  (12.0) (192) IP is onset of photoelectron b  12.76±0.01 (-5) (-3) See also: 83NES/MIL.  (13.88±0.05) (25)  11.44 (35) (36) IP from 84BER/GRE. See als  ≤11.05±0.035 (≤14) (≤16)  (12.1) (80) IP is onset of photoelectron b  (9.3) (-24) (-23) From appearance potential (1:  (10.5±0.5) (-36) (-35)  (9.0±0.2) (81)	eV kcal/mol kJ/mol  13.26±0.01 (267) (1116) (269) (1124)  (12.0) (192) (802) IP is onset of photoelectron band.  12.76±0.01 (-5) (-23) (-3) (-14) See also: 83NES/MIL.  (13.88±0.05) (25) (105)  11.44 (35) (146) (36) (151) IP from 84BER/GRE. See also: 83NES/MI  ≤11.05±0.035 (≤14) (≤57) (≤16) (≤65)  (12.1) (80) (334) IP is onset of photoelectron band(83NOV/I)  (9.3) (-24) (-99) (-23) (-96) From appearance potential (13.33 eV) in Cl  (10.5±0.5) (-36) (-151) (-35) (-147)  (9.0±0.2) (81) (337)	eV kcal/mol kJ/mol kcal/mol  13.26±0.01 (267) (1116) -39±5 (269) (1124) -37±5  (12.0) (192) (802) -85±0.5 IP is onset of photoelectron band.  12.76±0.01 (-5) (-23) -300±2 (-3) (-14) -298±2 See also: 83NES/MIL.  (13.88±0.05) (25) (105) -295.0±7.0  11.44 (35) (146) -229±1 IP from 84BER/GRE. See also: 83NES/MIL, 75TOR/WES  ≤11.05±0.035 (≤14) (≤57) -241±15 (≤16) (≤65) -239±15  (12.1) (80) (334) -199 IP is onset of photoelectron band(83NOV/POT).  (9.3) (-24) (-99) -239±5 (-23) (-96) -238±5 From appearance potential (13.33 eV) in CH <sub>3</sub> SiF <sub>3</sub> . IP is Δ  (10.5±0.5) (-36) (-151) -278 (-35) (-147) -277  (9.0±0.2) (81) (337) -127	eV keal/mol kJ/mol keal/mol kJ/mol  13.26±0.01 (267) (1116) -39±5 -163±21 (269) (1124) -37±5 -155±21  (12.0) (192) (802) -85±0.5 -356±2  IP is onset of photoelectron band.  12.76±0.01 (-5) (-23) -300±2 -1254±8 (-3) (-14) -298±2 -1245±8  See also: 83NES/MIL.  (13.88±0.05) (25) (105) -295.0±7.0 -1234±29  11.44 (35) (146) -229±1 -958±4 (36) (151) -228±1 -953±4  IP from 84BER/GRE. See also: 83NES/MIL, 75TOR/WES, 82LEV/LIA  ≤11.05±0.035 (≤14) (≤57) -241±15 -1009±63 (≤16) (≤65) -239±15 -1001±63  (12.1) (80) (334) -199 -833  IP is onset of photoelectron band(€3NOV/POT).  (9.3) (-24) (-99) -239±5 -1000±21 (-23) (-96) -238±5 -996±21  From appearance potential (13.33 eV) in CH <sub>3</sub> SiF <sub>3</sub> . IP is Δ <sub>E</sub> H(Ion) - Δ <sub>E</sub> H (10.5±0.5) (-36) (-151) -278 -1164 (-35) (-147) -277 -1160  (9.0±0.2) (81) (337) -127 -531  From appearance potential (13.10 eV) in XeF <sub>4</sub> .	eV keal/mol kl/mol keal/mol kl/mol reference  13.26±0.01 (267) (1116) -39±5 -163±21 85JANAF (269) (1124) -37±5 -155±21  (12.0) (192) (802) -85±0.5 -356±2 700°H/HUB IP is onset of photoelectron band.  12.76±0.01 (-5) (-23) -300±2 -1254±8 85JANAF (-3) (-14) -298±2 -1245±8  See also: 83NES/MIL.  (13.88±0.05) (25) (105) -295.0±7.0 -1234±29 75FLE/SVE  11.44 (35) (146) -229±1 -958±4 85JANAF (36) (151) -222±1 -953±4 IP from 84BER/GRE. See also: 83NES/MIL, 75TOR/WES, 82LEV/LIA.  ±11.05±0.035 (±14) (±57) -241±15 -1009±63 85JANAF (±16) (±65) -239±15 -1001±63  (12.1) (80) (344) -199 -833 81WOO IP is onset of photoelectron band(83NOV/POT).  (9.3) (-24) (-99) -239±5 -1000±21 83WAL (-23) (-96) -238±5 -996±21 Prom appearance potential (13.33 eV) in CH <sub>3</sub> SiF <sub>3</sub> . IP is Δ <sub>ℓ</sub> H/H(lon) · Δ <sub>ℓ</sub> H/(Neutral).  (10.5±0.5) (-36) (-151) -278 -1160 81WOO (-35) (-147) -277 -1160

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	n)	$\Delta_{\mathbf{f}}H(N_{\mathbf{f}})$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
F <sub>4</sub> HSi <sup>+</sup>							
SiF <sub>3</sub> FH		-140	-588				
	From proton affi	inity of SiF <sub>4</sub> (	RN 7783-61-	1)(84REE/MU	J). PA = 120	.2 kcal/mol,	
	503. kJ/mol.						
F <sub>4</sub> Mo <sup>+</sup>							
MoF <sub>4</sub>	(9.9)	(0)	(1)	-228	-954	81WOO	23412-45-5
		(1)	(4)	-227	-951		
F <sub>4</sub> M <sub>0</sub> O <sup>+</sup>							
MoOF <sub>4</sub>	13.8	2	6	-317	-1325	86BUR/FAW	14459-59-7
4		<i>3</i>	13	-315	-1318	0020141111	11107-07-7
	IP is onset of pho	otoelectron b	and (81VOV	/DUD).			
F <sub>4</sub> MoS <sup>+</sup>			· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·
MoSF <sub>4</sub>	(12.6±0.3)	(58)	(245)	-232±7	-971±29	80MAL/ALI	70487-60-4
7	IP from 80MAL/						, U , U , - U U - T
L			· · · · · · · · · · · · · · · · · · ·				
F <sub>4</sub> N <sub>2</sub> +							
$N_2F_4$	11.94±0.03	267	1119	-8	-33	84BER/GRE	10036-47-2
	The election	270	1131	<b>-</b> 5	-21		
	IP from 84BER/C	JRE.					
F <sub>4</sub> ORe <sup>+</sup>							
ReOF <sub>4</sub>	10.5	-22	-91	-264	-1104	86BUR/FAW	17026-29-8
	IP is onset of pho	toelectron ba	and (81VOV)	DUD).			
F <sub>4</sub> OS <sup>+</sup>					·		
SOF <sub>4</sub>	(12.3)	(61)	(254)	-223±11	-933±44	87HER	13709-54-1
,	IP is onset of pho						
F <sub>4</sub> OW <sup>+</sup>		<u>.</u>			<del></del>		<del></del>
WOF <sub>4</sub>	13.6	-28	-119	-342	-1431	86BUR/FAW	13520-79-1
•		-27	-111	-340	-1423		
	IP is onset of pho	toelectron ba	nd (81VOV/	_			
F <sub>4</sub> P <sub>2</sub> +							
P <sub>2</sub> F <sub>4</sub>	≤9.28	<i>≤-56</i> :	s-235	-270	-1130	84BER/GRE	13824-74-3
- 4- 4	IP from 84BER/C				1100	ODDINGIC	17047*17*3
		,					
F <sub>4</sub> Pb +							
PbF <sub>4</sub>	(10.4±0.3)		(175)	-198	-828	81WOO	7783-59-7
		(41)	(170)	-197	-823		
F <sub>4</sub> Pt <sup>+</sup>							
PtF <sub>4</sub>	(12.83±0.28)	(171)	(714)	-125±6	-524±25	83KOR/BON	13455-15-7
•	IP from 83KOR/B		-				

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	$\Delta_{\mathbf{f}}H(\mathbf{N})$	utral)	Neutral	CAS registry		
Neutral	eV		kJ/mol	kcal/mol		reference	number
F <sub>4</sub> S +							
SF <sub>4</sub>	12.03±0.05	95	397	-182±5	-763±21	85JANAF	7783-60-0
	See also: 81CO	<i>98</i> S/LLO.	408	−181±5	<i>−757±21</i>		
n avv.4							
F <sub>4</sub> SW <sup>+</sup> WSF <sub>4</sub>	(≤12.0±0.2)	(≤5)	(≤21)	≤-272±9	≤-1137±38	013// 47 / 47 1	41021 00 E
4	IP from 81MAI		(521)	5-2/219	7-113/130	81MAL/ALI	41831-80-5
F <sub>4</sub> S <sub>2</sub> +							
F <sub>3</sub> SSF	(10.15±0.10)	(76)	(319)	-158±6	-660±24	87HER	27245-05-2
	IP from 80GON	//HAA.					
F <sub>4</sub> Si <sup>+</sup>			•				
SiF <sub>4</sub>	(15.7)	(-24)	(-100)	-386.0±0.3		85JANAF	7783-61-1
	IP is onset of pl	(-23)	<i>(-94)</i> and <i>(7</i> 5LLO	-384.6±0.3		<b>Τ</b> Δ )	
	22 13 Olisot Of pr				1010, 02LE V/L		
F <sub>4</sub> U <sup>+</sup> UF <sub>4</sub>	(9.51)	(_160)	(_601)	202	1500	0000 1000	10010 1 : 1
OF <sub>4</sub>	(951)	( <del>-</del> 163) <i>(-162)</i>	(-681) <i>(-676)</i>	-382 -381	-1599 -1594	82TN270	10049-14-6
C 11/4						. ,	
F <sub>4</sub> W <sup>+</sup> WF <sub>4</sub>	(9.89±0.10)	(-18)	(-75)	-246	-1029	81WOO	13766-47-7
·	(1012010)						13700-47-7
F <sub>4</sub> Xe <sup>+</sup> XeF <sub>4</sub>	12.65±0.1	242	1015	40.00	004.4	<b>501011</b> 0.4.1	4.000.44.0
·	12.05±0.1		1015	-49±0.2	-206±1	72JOH/MAL	13709-61-0
F <sub>5</sub> I +							
IF <sub>5</sub>	12.943±0.005	106 <i>108</i>	445 <i>453</i>	-201±0.5 -199±0.5	-840±2 -832±2	85JANAF	7783-66-6
F <sub>5</sub> Mo <sup>+</sup>							
MoF <sub>5</sub>	10.5±0.3	-54	-228	-297±1	-1241±4	85JANAF	13819-84-6
J		<i>-53</i>	-223	-295±1	-1236±4		
	IP from 80MAL	/ALI2.					
F5ORe+			7			· • • • • • • • • • • • • • • • • • • •	
ReOF <sub>5</sub>	(13.2±0.1)	(21)	(88)	-283	-1186	81WOO	23377-53-9
F <sub>5</sub> P+							
PF <sub>5</sub>	(15.1)	(-33)	(-139)	-381	-1596	82TN270	7647-19-0
	IP is onset of pho	(-30)	(-127)	-379	-1584		
	If it offset of bu	Orderection of	anu.				
F <sub>5</sub> S +							
SF <sub>5</sub>	10.5±0.1	23 25	97 106	-219	<b>-</b> 915.9	81BAB/STR	10546-01-7
	IP from charge e	25 xchange brack	106 Keting experim	-216 Lents (81BAB/9	-906		
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from e	avilibairas C	come experiii	ours (ordans)	, 14, j,		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{f}})$	on)	$\Delta_{ m f} H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
F <sub>5</sub> U <sup>+</sup>							
UF <sub>5</sub>	(11.4)	(-200)	(-837)	<b>-463</b>	-1937	82TN270	13775-07-0
		(-199)	(-832)	-462	-1932		
F <sub>5</sub> W <sup>+</sup>							
WF <sub>5</sub>	(10.03±0.10)	(-103)	(-429)	-334	-1397	81WOO	19357-83-6
F <sub>6</sub> Mo+							
MoF <sub>6</sub>	(14.5±0.1)	(-38)	(-159)	-372.4±0.2		85JANAF	7783-77-9
		(-36)	(-152)	-370.7±0.2	? −1551± 1		
$F_6N_3P_3^+$							
N_	11.58	(-245)	(-1024)	-512	-2141	*EST	15599-91-4
FZPOPFZ	IP form 82LEV/L			-512	-2141	231	13333-31-4
F2							
F <sub>6</sub> Re <sup>+</sup>							
ReF <sub>6</sub>	(11.0)	(-69)	(-288)	-322	-1349	84BAR/YEH	10049-17-9
	IP from 80VOV/I	OUD.					
F <sub>6</sub> S <sup>+</sup>				*			
SF <sub>6</sub>	15.33±0.03	62	259		-1220.5±.8	85JANAF	2551-62-4
	See also: 82BIE/A	65 SB	273	-288.3±0.2	-1206.5±.8		
·	See also, 62BILA						
F <sub>6</sub> U <sup>+</sup>	44.00.040						
UF <sub>6</sub>	14.00±0.10	-190 - <i>189</i>	-796 -791	-513 - <i>512</i>	-2147 -2141	82TN270	7783-81-5
F <sub>6</sub> Xe <sup>+</sup>	12 10 0 02	214	007	67.0.E	070.0	<b>50</b> 70778.647	40400 00 0
XeF <sub>6</sub>	12.19±0.02	214	897	-67±0.5	-279±2	72JOH/MAL	13693-09-9
F7Re+							
ReF <sub>7</sub>	(14.1±0.1)	(-16)	(-69)	-342±3	-1429±13	84BAR/YEH	17029-21-9
Fe+							
Fe	7.870	281	1175	99	416	82TN270	7439-89-6
	See also: 82DYK/0	<i>280</i> GRA.	1173	99	414		
1.							<del></del>
FeH <sup>+</sup> FeH		(202)	(1104)				15(00 (0 7
ren	$\Delta_f H$ (Ion) from on	(283) set of endot	(1184) hermic reaction	on (86ELK/AR)	M3).		15600-68-7
	See also: 81ARM/				· <del>-</del> /-		
FeHO +							
FeOH	7.9±0.2	211	884			80MUR	12315-09-2
		(214)	(895)	32	133		-
	IP from 80MUR. 2	\fH(Ion) at	298 K from p	roton affinity of	FeO (84CAS/	FRE).	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ <sub>f</sub> H() kcal/mo	Ion) l kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry
				•			
FeI +	(7.8±0.5)	(247)	(1022)	((7)	maas	04675 4 77.060	
rei	Δ <sub>f</sub> H(Ion) from 84	<i>(247)</i> 1GRA/RO	(1033) S2. Cited IP is	(67)	(280) 4(Neutral)	84GRA/ROS2	
	See also: 85GRA			711(1011) - 2111	A(I voultary.		
FeI <sub>2</sub> +.			****				
FeI <sub>2</sub>	9.3	(233)	(976)	(19)	(79)	84GRA/ROS2	7783-86-0
_	IP from 84GRA/I	ROS. See a					
FeO +	The state of the s						
FeO	8.9±0.1	265.2	1109.7	60.0±5	251.0±21	85JANAF	1345-25-1
		265.3	1109.8	60.0±5	251.1±21		
	IP from 82ARM/I	HAL. Sec a	also: 84JAC/JA	.C, 81ARM/HA	L, 81KAP/ST	'A, 80MUR.	
FeV <sup>+</sup>			•				
VFe	(5.4)	(302)	(1264)	177	743	85HET/FRE	
	$\Delta_f H(Ion)$ and IP	from 85HE	ET/FRE. 0 K va	lues.			
Fe <sub>2</sub> +							
Fe <sub>2</sub>	6.30±0.01	325	1361	180	753	82SHI/GIN	12596-01-9
	IP from 84ROH/0	COX. 0 K v	ralues.				
Fm +							
Fm	6.64±0.11						7440-72-4
Ga <sup>+</sup>							
Ga	5.999	203	851	65.0	272.0	85JANAF	7440-55-3
	•	203	850	64.8	271.0		
	See also: 85HIR/S	TR.					
GaI <sup>+</sup>							
GaI	(9.0±0.3)	(219)	(915)	11.1	46.4	79HUB/HER	15605-68-2
		(219)	(917)	11.6	48.5		
GaI <sub>3</sub> +	, , , , , , , , , , , , , , , , , , , ,		***				
GaI <sub>3</sub>	9.40	183	765	-34	-142	82TN270	13450-91-4
GaO +				******		<u></u>	
GaO	(9.4±0.5)	(257)	(1074)	40±10	167±42	83PED/MAR	12024-08-7
	, ,	(257)	(1074)	40	167		
Gd <sup>+</sup>							<u> </u>
Gd	6.1502±0.0006	237	991	95	398	82TN270	7440-54-2
		237.2	992.3	95.3	398.9		
GdO+				<del></del>			
GdO	(5.75±0.1)	(116)	(486)	-16±3	-69±13	83PED/MAR	12024-77-0
	, ,	(116)	(484)		-71		
	See also: 80MUR/						

Table 1. Positive Ion Table - Continued

	Table 1. Positive foil Table - Continued									
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
GdS + GdS	(6.9±0.6) 0 K values.	(197)	(825)	38	159	82TN270	12134-74-6			
Ge +										
Ge	7.899	272.2 271.5	1138.7 <i>1135.9</i>	90.0 <i>89.3</i>	376.6 <i>373.8</i>	82TN270	7440-56-4			
GeH <sub>4</sub> + GeH <sub>4</sub>	11.33	283 285	1184 <i>1195</i>	22 24	91 <i>102</i>	64GUN/GRE	7782-65-2			
GeH <sub>5</sub> + GeH <sub>5</sub>	From proton aff 695. kJ/mol.	221 inity of GeH <sub>4</sub>	926 ; (RN 7782-65	-2) (80SEN/AE	BE). PA = 16	6.2 kcal/mol,				
GeI <sub>2</sub> + GeI <sub>2</sub>	(8.9) IP is onset of ph	(216) otoelectron b	(906) and (83JON/	11.2 VAN).	46.9	82TN270	13573-08-5			
GeI <sub>4</sub> +										
GeI <sub>4</sub>	(9.42)	(204) <i>(205)</i>	(852) <i>(857)</i>	-14 - <i>12.3</i>	-57 -51.5	82TN270	13450-95-8			
GeO +	11.25±0.01	250 250	1044 <i>1044</i>	-9.9±0.7 -9.9	-41±3 -41	84RAU/SCH	20619-16-3			
GeS +	9.98±0.02	252	1055	22	92	82TN270	12025-32-0			
GeSe +							,			
GeSe	(9.3)	(230) <i>(237)</i>	(964) <i>(993)</i>	23 23	96 <i>96</i>	77PED/RYL	12065-10-0			
	IP is onset of pho	otoelectron b	and.	<u> </u>						
GeSi <sup>+</sup> GeSi	8.2±0.3 0 K values.	315	1319	126	528	79HUB/HER	12025-36-4			
Ge <sub>2</sub> + Ge <sub>2</sub>	(7.8)	(293) <i>(293)</i>	(1226) (1224)	113 <i>113</i>	473 473	86KIN/NAG	12596-05-3			
Ge <sub>2</sub> H <sub>6</sub> <sup>+</sup>	(12.5±0.3)	(327)	(1368)	38.8	162	64GUN/GRE	13818-89-8			
Ge <sub>3</sub> H <sub>8</sub> + Ge <sub>3</sub> H <sub>8</sub>	(9.6±0.3)	(276)	(1153)	54.2	227	64GUN/GRE	14691-44-2			
		<del></del>								

Table 1. Positive Ion Table - Continued

· · · · · · · · · · · · · · · · · · ·							
Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol	∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
н+							
Н	13.598	365.7 365.2	<u>1530.0</u> <u>1528.0</u>	52.10 <i>51.63</i>	217.999 <i>216.035</i>	85JANAF	12385-13-6
HHe <sup>+</sup>			** ***				
HHe ·	$\Delta_{ m f} H$ (Ion) from 79 178. kJ/mol.	323 9HUB/HE	1352 IR. Correspond	ing proton affii	nity of He = 47	2.5 kcal/mol,	13766-24-0
HI+				····			
ні	10.386±0.001	245.8 246.3	1028.5 1030.6	6.3±0.05 6.8±0.05	26.4±0.2 28.5±0.2	85JANAF	10034-85-2
	See also: 81KIM/I	KAT.					
HK <sup>+</sup>					<del></del>	<del></del>	
КН	(8.0±1.0)	(214) <i>(215)</i>	(895) <i>(896)</i>	29±3 <i>30±3</i>	123±15 <i>126±15</i>	85JANAF	7693-26-7
	IP from 82FAR/S	RI.					
нко <sup>+</sup>							
кон	(7.50±0.15)	(117) <i>(119)</i>	(491) <i>(497)</i>	-56 <i>-54</i>	-233 -227	81LIN/BES	1310-58-3
	See also: 82FAR/S		` ,				
HKr <sup>+</sup>		······································					
KrH		264	1105				
	From proton affin	ity of Kr (	RN 7439-90-9).	PA = 101.6  kg	cal/mol, 425. kJ	/mol.	
HLi <sup>+</sup>		· · · · · · · · · · · · · · · · · · ·			****		
LiH	7.7	(211)	(882)	33.3±0.01	139.2±0.04	79HUB/HER	7580-67-8
		(211)	(882)	33.3±0.01	139.4±0.04		
	IP from 79HUB/F	IER.					
HLi <sub>2</sub> O <sup>+</sup>					~·_·		•
Li <sub>2</sub> OH		37	155				
	From reaction ent affinity of Li <sub>2</sub> O (F					ng proton	
HMgO <sup>+</sup>						<del></del>	
МдОН	7.5±0.3 $\Delta_{ m f} H({ m Ion})$ from 81	<i>(143)</i> MUR. 0 K	<i>(599)</i> Values.	-30	-125	81MUR	12141-11-6
HMn +					<del></del>		
MnH	(7.8)	(242)	(1011)	(61)	(256)	79HUB/HER	14452-76-7
	$\Delta_f H(\text{Ion})$ from on Sec also: 81ARM/	set of end	othermic reacti	on (86ELK/AR	M2).		
HMno +	And the second s						
HMn <sub>2</sub> + Mn <sub>2</sub> H		(284)	(1186)				
IVI II A PT							

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> <i>H</i> (Ic		Δ <sub>f</sub> H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
HMo+							
MoH		(331)	(1385)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from or	nset of endo	thermic react	ion. 0 K value.			
HN <sup>+</sup>							
NH	13.49±0.01	401.1	1678.2	90.0±4.0	376.6±16.7	85JANAF	13774-92-0
		401.1	1678.1	90.0±4.0	376.5±16.7		
	$\Delta_{\mathrm{f}}H$ (Ion) from a	pearance p	otential deter	mination (85G)	IB/GRE).		
HNO <sup>+</sup>			· · · · · · · · · · · · · · · · · · ·		·····		
NOH		274.3	1147.7				
		274.8	1149.8				
	$\Delta_{\mathrm{f}}H$ (Ion) from ap	pearance po	otential deter	mination (82K)	JT/G00).		
HNO	(10.1)	(256.3)	(1072.3)	24	100	82BAU/COX	14332-28-6
11110	(10.1)	(256.8)	(1074.4)	24	100	62BAU/CUX	14332-28-0
	$\Delta_{\mathrm{f}}H$ (Ion) from ap	•	•	nination (82KU	JT/GOO).		
	IP is $\Delta_f H(Ion) - \Delta_f$			`	,		
HNOS+							
HN=S=O	(11.3)	(302)	(1265)	41.7	175	82OLE/TUR	13817-04-4
	IP is onset of phot		•		1.5	UZULLI I OK	15017-04-4
mo +			· · · · · · · · · · · · · · · · · · ·				
HNO <sub>2</sub> + HNO <sub>2</sub>	≤11.3	234	977	10	00	000 411/0016	5500 55 C
mvo <sub>2</sub>	211.5	254 ≤243	977 ≤1018	-19 -17	-80 -72	82BAU/COX	7782-77-6
	$\Delta_{ m f} H$ (Ion) at 298 K					MUN).	
	PA = 140 kcal/mo			2 (************************************	,(		
HNO <sub>3</sub> +							• •
HNO <sub>3</sub>	11.95±0.01	244	1018	-32	-135	82BAU/COX	7407 27 2
103	11.5510.01	246	1018	-32 -30	-135 -125	62BAU/CUX	7697-37-2
HN <sub>2</sub> +							
HN <sub>2</sub>	77 · am	247.5	1035.5				
	From proton affin PA = 118.2 kcal/n			nination (82LI	EV/LIA) gives t	he same value.	
			,				
HN <sub>2</sub> O +							
HNNO	<u></u>	246	1031				
	From proton affini PA = 138.8  kcal/n			2). See also: 85	5MCM/KEB, 85	MCM/KEB2.	
HN <sub>3</sub> +							
HN <sub>3</sub>	10.72±0.025	317.5	1328.3	70.3	294.1	82TN270	7782-79-8
J		318.9	1334.8	71.8	300.5		· · · · · · · · · · · · · · · · · · ·
			<del> </del>				
HNP+							
HNb <sup>+</sup> NbH		(330)	(1380)				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	Δ <sub>f</sub> H(N	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol		-	kJ/mol	reference	number
HNe <sup>+</sup>							
NeH		318	1329				
	$\Delta_{ m f} H$ (Ion) from 68 201. kJ/mol.	CHU/RUS	. Correspond	ing proton aff	inity of Ne = 48	3.1 kcal/mol,	
HNi <sup>+</sup>							
NiH	(≤9.0)	(291)	(1216)	> (83)	> (347)	79HUB/HER	14332-32-2
	$\Delta_{ m f} H$ (Ion) from on See also: 80ARM/					K values.	
HO+							
ОН	13.00	309.1	1293.3	9.3±0.3	39.0±1.2	85JANAF	3352-57-6
		309.0	1292.7 -	9.2±0.3	38.4±1.2		
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from ap						
	$\Delta_f H$ (Neutral) is in of 13.01 eV. See a			experimenta	lly determined v	value	
	or 13.01 ev. See a	150: 84 VAIN	/DEL.	·····		······································	
HOSr <sup>+</sup>							
SrOH	5.1±0.2	74	309	-44	<del>-</del> 183	83MUR	
	$\Delta_{\mathbf{f}}H( ext{Ion})$ from on IP is $\Delta_{\mathbf{f}}H( ext{Ion})$ - $\Delta$			on (83MUR);			
HO <sub>2</sub> +					**************************************	*	
_но <sub>2</sub>	11.35±0.01	264.2	1105.5	2.5	10.5	82TN270	3170-83-0
		264.9	1108.5	3.2	13.4		
	IP from 81DYK/JC corrected to 298 K		-		ce potential me	asurements	
	Conceted to 258 K	. 204.0 KCal	11101, 1107.5 K.				
но <sub>2</sub> s+							
OSOH		143	597				
	From proton affini						
	re-evaluated relatives 636. kJ/mol.	ve to CO st	andard (84L)	A/LIE). PA :	= 152.1 kcal/mc	)l,	
	030. KJ/IIIOI.						
но <sub>3</sub> s+							
O <sub>2</sub> SOH		(133)	(557) <sup>-</sup>				
	From proton affini	ity of SO <sub>3</sub> (	RN 7446-11-9)	PA = (138)	kcal/mol, (577)	) kJ/mol.	
HP+			7.00.00 mg				
PH	10.18±0.1	291	1218	56±2	236±8	86BER/CUR	13967-14-1
		291	1219	57±2	237±8		
	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from 791	HUB/HER,	86BER/CUR	. IP from 86E	ER/CUR.		
HPd <sup>+</sup>			· · · · · ·		<del></del>		
PdH		(281)	(1176)				
		\/	(/				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
HS <sup>+</sup>							
SH	10.37±0.01	272.4	1139.8	33.3±1.2	139.3±5.0	85JANAF	13940-21-1
	ID 6-0 70DI INI	271.8	1137.0	32.6±1.2	136.5±5.0	:	
	IP from 79DUN/ earlier results. Se	-		RE/12E, in go	od agreement	with	
HSc <sup>+</sup>					······································		
ScH		239	999				33486-02-1
	$\Delta_{ m f} H$ (Ion) from 0 K values.	nset of endo	thermic reacti	on (84TOL/BI	EA). See also: 8	87SUN/ARI.	
HSe +							
SeH	(9.79) 0 K values.	(258)	(1080)	(32)	(135)	79HUB/HER	13940-22-2
HSi <sup>+</sup>	<u> </u>	<u>-</u>			- t		
SiH	7.89±0.07	272.0	1138.0	90.0±2.0	376.7±8.4	85JANAF	13774-94-2
	A **/* . \ A	271.5	1136.2	89.6±2.0	374.9±8.4		
	Δ <sub>f</sub> H(Ion) from 8-	4ELK/ARM	. IP from 87B	OO/ARM.			
HTe <sup>+</sup>							
TeH	(9.09)	(244)	(1020)	34	143	79HUB/HER	13940-36-8
HTi <sup>+</sup>					<del></del>		
TiH	(6.0)	(265)	(1109)	(127)	(532)	79HUB/HER	
	$\Delta_f H(\text{Ion})$ from on IP is $\Delta_f H(\text{Ion}) - D$			on (86ELK/AF	M).		
HU <sup>+</sup>							
UH		256	1070				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from or	nset of endor	thermic reacti	on (77ARM/H	OD).		
HV+							
VH			(1179)				
	$\Delta_f H$ (Ion) from or $0  ext{ K value}$ .	nset energy o	of endothermi	c reaction (84A	.RI/ARM, 85E	LK/ARM).	
HXe <sup>+</sup>							
XeH		247	1034				
	From proton affir	nity of Xe (R	N 7440-63 <b>-</b> 3).	PA = 118.6  kg	cal/mol, 496. k.	J/mol.	
HY+							
YH		(238)	(995)				
	$\Delta_{f}H(Ion)$ from or	nset of endot	hermic reacti	on. 0 K value.			
HZn <sup>+</sup>							
ZnH	(9.4)	(241)	(1008)	(25)	(106)	79HUB/HER	
	From proton affir	ity of Zn (R	N 7440-66-6).	IP is $\Delta_f H(Ion)$	$-\Delta_{\mathbf{f}}H(\operatorname{Neutra})$	al).	

Table 1. Positive Ion Table - Continued

	Table	. rositi	ve Ion Table	e - Contin			
ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		$\Delta_f H(Ne)$		Neutral	CAS registr
Neutral	eV	kcai/moi	kJ/mol	kcal/mol	KJ/MOI	reference	number
HZr <sup>+</sup>							
ZrH			(40.00)	123.4	516.3	85JANAF	
	$\Delta_{\mathbf{f}}H$ (Ion) from on	(301) set of end	(1260) othermic react	123.6	517.3		
	Δβλ(ton) from on		· · · · · · · · · · · · · · · · · · ·				
H <sub>2</sub> +							
H <sub>2</sub>	15.42589±0.00005	355.7	1488.3	0	0	*DEF	1333-74-0
•	See also: 81KIM/K	<u>355.7</u> AT.	<u>1488.3</u>	0	0		
H <sub>2</sub> I+		225	0.41				
H <sub>2</sub> I	From proton affin	225 ity of HL (	941 RN 10034-85-2	results of 85M	CM/KEB re-	evaluated	
	relative to CO star	-					
		· · ·	·····				
H <sub>2</sub> I <sub>2</sub> Si <sup>+</sup>						0.57.131.17	40000000
SiH <sub>2</sub> I <sub>2</sub>	(9.4)	(208) <i>(206)</i>	(896) <i>(861)</i>	-9±5 -7±5	-38±20 -28±20	85JANAF	13760-02-6
	IP is onset of phot			-/30	-20±20		
н <sub>2</sub> ко+			4				
кон <sub>2</sub>	A 17/1-1 See 10	(47)	(198)	mination (605)	Λ /D <b>グ</b> Ι)		
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from eq	ullibrium	constant deten	mination (695E	A/DZI).		
H <sub>2</sub> N <sup>+</sup>							
NH <sub>2</sub>	11.14±0.01	302.0	1263.8	45.1±0.3	188.7±1.3	85GIB/GRE	15194-15-7
	A **** \ A	302.7	1266.4	45.8±0.3	191.6±1.3	95CID/CDP	
	$\Delta_{\mathbf{f}}H$ (Ion) from ap	pearance p	potential deter	mination is in a	greement. IP t	rom 85GIB/GRE.	
H <sub>2</sub> NO +							
H <sub>2</sub> NO		224.6	939.7				
	$\Delta_{\mathbf{f}}H$ (Ion) from ap	pearance p	otential deter	mination (82K)	JT/GOO).		
H <sub>2</sub> N <sub>2</sub> +		" '					
$\frac{\mathbf{n_2} \mathbf{N_2}}{(\mathbf{Z}) \cdot \mathbf{H} \mathbf{N} = \mathbf{N} \mathbf{H}}$	(9.52±0.05)	(275)	(1150)	55	232	82CAS/GOD	28647-38-3
(,· · - • · · •	()	(= · = /	\ <i>-</i> /				
(E)-HN=NH	(9.59±0.01)	(272)	(1137)	51	212	82CAS/GOD	3618-05-1
H <sub>2</sub> N <sub>3</sub> +							
H <sub>2</sub> NNN		(257)	(1075)				
••2•••	From proton affin			8) (84BEA/EY	E). PA = 179	kcal/mol,	
	749 kJ/mol.	•					
H <sub>2</sub> NaO <sup>+</sup>			<del></del>				
NaOH <sub>2</sub>		71	296				
	From proton affin			3-2) (69SEA/D	ZI). PA = 24	8 kcal/mol,	
	1036 kJ/mol.	•					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry			
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number			
H <sub>2</sub> O <sup>+</sup>										
н <sub>2</sub> о	12.612±0.010	233.0	<u>975.0</u>	-57.80	-241.83	85JANAF	7732-18-5			
-		233.7	<u>977.9</u>	-57.10	-238.92					
	See also: 81KIM/I	KAT.								
H <sub>2</sub> O <sub>2</sub> +										
H <sub>2</sub> O <sub>2</sub>	10.54	210	881	-32.6	-136.3	82BAU/COX	7722-84-1			
		212	887	-31.1	-130.0					
	See also: 77ASH/	BUR, 81KI	M/KAT.							
H <sub>2</sub> P+										
PH <sub>2</sub>	9.824±0.002	261	1093	33.3	139.5	86BER/CUR				
-		261	1090	34.0±0.6	142.2±2.5					
	IP from 86BER/C	UR. See al	so: 82DYK/JO	N2. 0 K values.						
H <sub>2</sub> S+										
H <sub>2</sub> S	10.453±0.008	236	988	-4.9	-20.5±0.8	85JANAF	7783-06-4			
2		237	991	-4.2	-17.6±0.8					
	IP is average of se	IP is average of several spectroscopic and photoionization-onset determinations								
	•	LEV/LIA,	84BLA/WAL,	83PRE/TZE).	See also: 81Sl	MI/ADA, 81WAL/F	BLA,			
	81KIM/KAT.									
H <sub>2</sub> S <sub>2</sub> +										
H <sub>2</sub> S <sub>2</sub>	(9.3)	(218)	(913)	4	16	82TN270	13465-07-1			
2 2	IP is onset of phot	oelectron b								
H <sub>2</sub> Sc <sup>+</sup>			<u> </u>		<del></del>					
HScH		(238)	(996)				13598-30-6			
*******	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from on	, ,		on (84TOL/BE	A). See also: 8	7SUN/ARI.				
	0 K value.			`	•					
u c.+			<u></u>							
H <sub>2</sub> Se <sup>+</sup> H <sub>2</sub> Se	9.882±0.001	235	983	7	30	82TN270	7783-07-5			
11200	71000201001	236	987	8	34	02211270	,,,,,,			
H <sub>2</sub> Si <sup>+</sup>	0.00	0.000	4455.0	<b>.</b>	000 0	000000000000000000000000000000000000000	10007.00.1			
A17-	8.92±0.07	276.1	1155.2	69±2	289±8	87BOO/ARM	13825-90-6			
SiH <sub>2</sub>			O/AKOVI, in agr	reement with u						
SiH <sub>2</sub>	IP and $\Delta_{\mathrm{f}}H$ (Ion) $\mathrm{f}$		auchamp See	Iso: 83DYK/IC	)N2.84CH A /I					
			auchamp. See a	also: 83DYK/JC	ON2, 84CHA/I					
	IP and $\Delta_{\mathrm{f}}H$ (Ion) $\mathrm{f}$		auchamp. See a	also: 83DYK/JC	DN2, 84CHA/I	111.				
	IP and $\Delta_{\mathrm{f}}H$ (Ion) $\mathrm{f}$		auchamp. See a	also: 83DYK/JC	DN2, 84CHA/I	82TN270	7783-09-7			
H <sub>2</sub> Te <sup>+</sup> H <sub>2</sub> Te	IP and ∆ <sub>f</sub> H(Ion) f R.R. Corderman a	nd J.L. Bea	-				7783-09-7			
H <sub>2</sub> Te <sup>+</sup> H <sub>2</sub> Te H <sub>3</sub> +	IP and ∆ <sub>f</sub> H(Ion) f R.R. Corderman a	235	982							
H <sub>2</sub> Te <sup>+</sup>	IP and ∆ <sub>f</sub> H(Ion) f R.R. Corderman a	nd J.L. Bea	-				7783-09-7 12184-91-7			
H <sub>2</sub> Te <sup>+</sup> H <sub>2</sub> Te H <sub>3</sub> +	IP and ∆ <sub>f</sub> H(Ion) f R.R. Corderman a	235 264.5 265	982 1106.6 <i>1107</i>	24	100	82TN270				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Ionization potential $\Delta_f H(Ion)$		$\Delta_{\mathbf{f}}H(N$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
H <sub>3</sub> ISi <sup>+</sup>							
SiH <sub>3</sub> I	(9.5)	(219)	(915)	-0.5±4	-2±17	85JANAF	13598-42-0
	IP is onset of pho	<i>(221)</i> toelectron b	(925) and.	2±4	8±17		
	Tr is disset of pilot						
H <sub>3</sub> N <sup>+</sup> ·			0040	44.0	45.0.0.4	OSTANIA V	7664 41 7
NH <sub>3</sub>	10.16±0.01	223.2 <i>224.9</i>	934.0 <i>941.0</i>	-11.0 - <i>9.3</i>	-45.9±0.4 - <i>38.9±0.4</i>	85JANAF	7664-41-7
	See also: 81KIM/I						
H <sub>3</sub> NO <sup>+</sup>							
NH <sub>2</sub> OH	10.00	(221)	(923)	-10	-42	69BEN/CRU	7803-49-8
-	IP from 83KOP/N	IOL. See al	so: 81KIM/KA	AT, 82KUT/G	00.		
H <sub>3</sub> O +			•				
30 Н <sub>3</sub> О		141	591				
	A ===== 1	143	597	1 O A 7VI-	) - 4 O W C		
	$\Delta_f H$ (Ion) at 298 F potential from (H						
	potential 11011 (1-	2012(1111					
H <sub>3</sub> O <sub>2</sub> +		454	<b>61.</b>				
н <sub>2</sub> 00н	From proton affir	171 nity of HaO	716 (RN 7722-84	-1). PA = 16	2. kcal/mol. 678.	kJ/mol.	
H <sub>3</sub> O <sub>4</sub> S +		(04)	(00)				
(HO) <sub>3</sub> SO	From proton affir	(21) nity of HaSC	(88) ), (RN 7664-9	3-9). PA = (	169) kcal/mol. (*	707) kJ/mol.	
			4 (		,,,		
H <sub>3</sub> P+					5.4.4.5	(ACLINICIDE)	7002 61 2
PH <sub>3</sub>	9.869±0.002	229 <i>231</i>	957 966	1.3±0.4 <i>3.1</i>	5.4±1.7 <i>13.3</i>	61GUN/GRE	7803-51-2
	IP from 83MAR/I						
4							
H <sub>3</sub> S <sup>+</sup>		190	797				
н <sub>3</sub> S	From proton affir			). See also: 83	BPRE/TZE2, 841	BLA/WAL,	
	83ERM/AKO. PA						
H <sub>3</sub> Sb <sup>+</sup>							
SbH <sub>3</sub>	9.54±0.03	255	1066	35	145	82TN270	7803-52-3
J		257	1074	37	153		
H <sub>3</sub> Se <sup>+</sup>		<del></del>					· · · · · · · · · · · · · · · · · · ·
		202	843				
H <sub>3</sub> Se	From proton affir	nity of H <sub>2</sub> Se	(RN 7783-07-	-5). PA = 17	1.3 kcal/mol, 717	. kJ/mol.	
H <sub>3</sub> Se							
	-						
H <sub>3</sub> Se H <sub>3</sub> Si <sup>+</sup> SiH <sub>3</sub>	8.14±0.01	237.1	992	48.5±1.5	202.9±6.3	87BOO/ARM	13765-44-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		$\Delta_f H(Ne)$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
H <sub>3</sub> Te <sup>+</sup>							
TeH <sub>3</sub>		214	894				
	-	roton affinit	y of H <sub>2</sub> Te (Ri	N7783-09-7)(86	KAR/JAS). P	A = 176  kcal/mol,	
	736 kJ/mol.						
H <sub>4</sub> N <sup>+</sup>							
NH <sub>4</sub>	(4.73±0.06)	(151)	(630)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from p						
	spectroscopy data	(82GEL/CI	LE). PA = (2	204.0) kcal/mol,	(854.) kJ/mol	•	
H <sub>4</sub> N <sub>2</sub> +							
N <sub>2</sub> H <sub>4</sub>	8.1±0.15	(210)	(876)	22.8±0.2	95.3±0.8	85JANAF	302-01-2
<u>.</u>		(213)	(891)	26.1±0.2	109.4±0.8		
	From charge trans	-	ium constant	determinations	(84MAU/NE)	L).	
	See also: 81KIM/I	KAT.					
H <sub>4</sub> N <sub>4</sub> +							
$(E)-H_2NN=NNH_2$	(≤8.99)	(≤260)	(≤1089)	53	222	82TN270	54410-57-0
H <sub>4</sub> P+		170	746				
PH <sub>4</sub>	From proton affin	178 sity of PH <sub>2</sub> (	746 RN 7803-51-2	) PA = 188.6	kcal/mol 780	kI/mol	
	- Trom proton units						
H <sub>4</sub> P <sub>2</sub> +							
$P_2H_4$	8.8±0.1	(219)	(918)	16	69	*EST	13445-50-6
	IP is onset of photo	oelectron b	and.				
H <sub>4</sub> Si <sup>+</sup>							
SiH <sub>4</sub>	11.65	277	1159	8	35	81BEL/PER	7803-62-5
•			1170				
		280	1170	11	46		
rr a +		280	1170	11	46		
						92TN1270	2406 52 2
H <sub>4</sub> Sn <sup>+</sup> SnH <sub>4</sub>	(10.75)	(287)	(1200)	39	163	82TN270	2406-52-2
	(10.75)	(287) (290)	(1200) (1212)			82TN270	2406-52-2
		(287) (290)	(1200) (1212)	39	163	82TN270	2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +	(10.75)	(287) (290) as not been	(1200) (1212) observed.	39	163	82TN270	2406-52-2
SnH <sub>4</sub>	(10.75) The SnH <sub>4</sub> <sup>+</sup> ion h	(287) (290) has not been	(1200) (1212) observed.	39 42	163 175		2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +	(10.75)	(287) (290) has not been	(1200) (1212) observed.	39 42	163 175		2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> + NH <sub>3</sub> NH <sub>2</sub>	(10.75) The SnH <sub>4</sub> <sup>+</sup> ion h	(287) (290) has not been	(1200) (1212) observed.	39 42	163 175		2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +  NH <sub>3</sub> NH <sub>2</sub>	(10.75) The SnH <sub>4</sub> <sup>+</sup> ion h	(287) (290) has not been	(1200) (1212) observed.	39 42	163 175		2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +  NH <sub>3</sub> NH <sub>2</sub> H <sub>5</sub> Si +	(10.75) The SnH <sub>4</sub> <sup>+</sup> ion h	(287) (290) has not been 184 hity of hydraz (219)	(1200) (1212) observed. 770 zine (RN 302-0	39 42 01-2). PA = 20	163 <i>175</i> 4.7 kcal/mol, s	856. kJ/mol.	2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +  NH <sub>3</sub> NH <sub>2</sub> H <sub>5</sub> Si +  SiH <sub>5</sub>	(10.75)  The SnH <sub>4</sub> <sup>+</sup> ion h  From proton affin	(287) (290) has not been 184 hity of hydraz (219)	(1200) (1212) observed. 770 zine (RN 302-0	39 42 01-2). PA = 20	163 <i>175</i> 4.7 kcal/mol, s	856. kJ/mol.	2406-52-2
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +  NH <sub>3</sub> NH <sub>2</sub> H <sub>5</sub> Si +  SiH <sub>5</sub> H <sub>6</sub> Si <sub>2</sub> +	(10.75)  The SnH <sub>4</sub> <sup>+</sup> ion h  From proton affin	(287) (290) tas not been  184 tity of hydraz  (219) tity of SiH <sub>4</sub> (	(1200) (1212) observed. 770 zine (RN 302-0 (917) (RN 7803-62-5	39 42 01-2). PA = 20 ). PA = (155)	163 175 4.7 kcal/mol, 3 kcal/mol, (648	856. kJ/mol. 8) kJ/mol.	
SnH <sub>4</sub> H <sub>5</sub> N <sub>2</sub> +  NH <sub>3</sub> NH <sub>2</sub> H <sub>5</sub> Si +	(10.75)  The SnH <sub>4</sub> <sup>+</sup> ion h  From proton affin	(287) (290) has not been 184 hity of hydraz (219)	(1200) (1212) observed. 770 zine (RN 302-0	39 42 01-2). PA = 20	163 <i>175</i> 4.7 kcal/mol, s	856. kJ/mol.	2406-52-2 1590-87-0

Table 1. Positive Ion Table - Continued

	Tubic	1, 1 0510	ve Ion Table	- Contin			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(l kcal/mo	lon) l kJ/mol	∆ <sub>f</sub> H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
H <sub>8</sub> Si <sub>3</sub> <sup>+</sup> Si <sub>3</sub> H <sub>8</sub>	(9.2) IP is onset of pho	(241)	(1009) band.	29	121	81BEL/PER	7783-26-8
	II is disset of pilot			_			
H <sub>10</sub> Si <sub>4</sub> + Si <sub>4</sub> H <sub>10</sub>	(8.9) IP is onset of pho	(244) toelectron	(1021) band.	39	162	81WAL	7783-29-1
He <sup>+</sup>			<del></del>				
He	24.587	<u>567.0</u> <u>567.0</u>	<u>2372</u> <u>2372</u>	0 <i>0</i>	0 <i>0</i>	*DEF	7440-59-7
HeNe <sup>†</sup> HeNe	20.87 Δ <sub>f</sub> H(Ion) from 78	<i>481.3</i> BDAB/HE	<i>2013.9</i> - R. 0 K values.	-0.028	-0.12	79HUB/HER	12162-16-2
He <sub>2</sub> + He <sub>2</sub>	22.223 IP from 79HUB/F	<i>512.4</i> HER. 0 K v	<i>2144.1</i> valu <b>c</b> s.	-0.02	-0.09	79HUB/HER	12184-98-4
Hf <sup>+</sup>							
Hf	6.78	304 <i>304</i>	1273 <i>1273</i>	148 <i>148</i>	619 <i>619</i>	82TN270	7440-58-6
	IP from 76MEG/	MOO.					
HIO +	(7.55±0.1)	(190) <i>(192)</i>	(795) (804)	16±3 <i>18</i>	67±13 <i>7</i> 6	83PED/MAR	12029-22-0
Hg <sup>+</sup>							
Hg	10.437	255.3 256.1	<u>1068.3</u> <u>1071.5</u>	14.7 <i>15.4</i>	61.3 <i>64.5</i>	82TN270	7439-97-6
	See also: 84LIN/L	AA.					
HgI <sub>2</sub> <sup>+</sup> HgI <sub>2</sub>	9.5088±0.0022	215.2 <i>216.7</i>	900.3 <i>906.</i> ∂	-4.1 -2.6	-17.2 -10.9	82TN270	7774-29-0
	Cited ionization potential for form	otential (8	3LIN/TZE) ref	ers to formati	ion of HgI <sub>2</sub> + (	<sup>2</sup> 11 <sub>3/2</sub> )· Ionization :: 81LEE/POT.	
Hg <sub>2</sub> +	0.000		000	27	114	OJIJI <sup>I</sup>	12506 25 7
Hg <sub>2</sub>	9.103±0.010	237 <i>239</i>	992 1000	27 29	114 <i>122</i>	82HIL	12596-25-7
	IP from 84LIN/LI	A.					_
Ho <sup>+</sup>							
Но	6.0216±0.0006	211 <i>211.2</i>	882 <i>883.6</i>	72 72.3	301 <i>302.6</i>	82TN270	7440-60-0

Table 1. Positive Ion Table - Continued

ION	Y14141-1	A 17/1		A 77/NI-		Name	CASint
Neutral	Ionization potential	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
H <sub>0</sub> O <sup>+</sup>							
НоО	(6.17±0.1)	(128) <i>(126)</i>	(534) <i>(528)</i>	−15±6 <i>−16</i>	-61±25 -67	83PED/MAR	12281-10-6
	See also: 80MUI	R/HIL.					
<u>I</u> +							····
I	10.451	266.5	1115.2	25.5	106.8	82BAU/COX	14362-44-8
	0 1 2 01770	266.6	1115.6	25.6	107.2		
	See also: 81HO	*/CAB, 85G1	RA/ROS.				
IK+							
KI	(7.21±0.3)	(136) <i>(137)</i>	(570) <i>(573)</i>		-125.5±2.1 -122.1±2.1	85JANAF	7681-11-0
	See also: 82EMC						
ILi+		· · · · · · · · · · · · · · · · · · ·					
LiI	(7.5)	(151) <i>(152)</i>	(633) (635)	-21.7±2.0 -21.3±2.0		85JANAF	10377-51-2
	IP is onset of pho						
INa +							
NaI	7.64±0.02	157	659	-18.6	-77.8	82TN270	7681-82-5
		158	662	-17.9	-74.9		
	See also: 82EMC	D/HOR, 83H	IL/GIN, 84HI	IL, 82LEL/BAL	•		
IRb+							
RbI	(7.12±0.1)	(132)	(554)	-32	-133	79HUB/HER	7790-29-6
		(133)	(558)	-30.9	-129.3		
	See also: 82EMC	)/HOR					
ITI+							
Til	8.47±0.02	197	824	2	7	82TN270	7790-30-9
	See: 83BAN/BR	197 T	823	1	6		
	See: 83BAIN/BR	l. 					
I <sub>2</sub> +				-			
I <sub>2</sub>	9.3995±0.0012	231.7	969.3	14.9	62.4	82BAU/COX	7553-56-2
	See also: 81HOA	<i>232.4</i> VCAB, 85GR	<i>972.4</i> RA/ROS, 81K	<i>15.7</i> IM/KAT.	65.5		
I <sub>2</sub> Li <sub>2</sub> +							
··· <del>-</del>							
Li CI Li	(≤9.23±0.06)	(≤126) <i>(≤127)</i>	(≤529) <i>(≤532)</i>	-87±4 -85±4	-362±17 -356±17	85JANAF	37279-36-0
., 1, ,		(/)	(/		32 32 4		
I <sub>2</sub> Mg <sup>+</sup>							
MgI <sub>2</sub>	(9.57±0.03)	(180)	(751)	-41	-172	82TN270	10377-58-9

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Tabl	e - Contini	ued		
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H(l kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
I <sub>2</sub> O <sub>2</sub> W <sup>+</sup> WO <sub>2</sub> I <sub>2</sub>	(10.4±0.4)	(137.5)	(575.4)	-102.3	-428.0	76DEL/HAL	14447-89-3
I <sub>2</sub> Pb <sup>+</sup> PbI <sub>2</sub>	8.86±0.03 Onset of photoele	(205) ectron band	<i>(856)</i> 1: 8.6 eV. Sec:	<i>0.2±1</i> 84NOV/POT2.	1±4 0 K values.	85JANAF	10101-63-0
I <sub>2</sub> Sn <sup>+</sup> SnI <sub>2</sub>	8.83±0.1 IP from 83HIL/G	204 IN, 84NO\	854 //POT2.	0.5	2	82TPIS	10294-70-9
I <sub>2</sub> Sr <sup>+</sup>							
SrI <sub>2</sub>	(8.3)  IP is onset of photon	(126) <i>(126)</i> toelectron	(526) <i>(529)</i> band (79LEE/	-65.7±1.5 -65.0±1.5 POT2). See als	-272±6	85JANAF E.	10476-86-5
L	T is onset of pilot						
I3La <sup>+</sup> LaI <sub>3</sub>	8.8 IP is onset of pho	119 toelectron	498 band (83RUS/	-84 GOO).	-351	82TN270	
I <sub>3</sub> Nd <sup>+</sup>		<del></del>					
NdI <sub>3</sub>	8.7 IP is onset of pho	124 toelectron	519 band (83RUS/	-76 GOO).	-320	82TN270	13813-24-6
I <sub>4</sub> Ti+				<del></del>			
TiI <sub>4</sub>	(9.1)	(143) (145)	(600) (606)	-66±2 -65±2	−278±8 <i>−272±8</i>	85JANAF	7720-83-4
	IP is onset of photographic	toelectron	band.				
I <sub>4</sub> Zr <sup>+</sup> ZrI <sub>4</sub>	(9.3)	(128) <i>(130)</i>	(534) <i>(544)</i>	-95±2 -85±2	-363±8 -357±8	85JANAF	13986-26-0
	IP is onset of pho	toelectron	band.			<del></del>	
In <sup>+</sup> In	5.786	191.7 191.6	801.9 <i>802.6</i>	58.2 <i>58.2</i>	243.7 243.3	82TN270	7440-74-6
	See also: 82GOM	/CHA, 85K	AP/LEL				
InS <sup>+</sup> InS	(7.0±0.5) 0 K values.	(218)	(911)	57	236	79HUB/HER	12030-14-7
InSe <sup>+</sup> InSe	(7.1±0.5) 0 K values.	(218)	(913)	55	228	79HUB/HER	1312-42-1
InTe +	(7.6±0.5) 0 K values.	(230)	(962)	55	229	79HUB/HER	12030-19-2

Table 1. Positive Ion Table - Continued

	Table	Continu					
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Io kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
In <sub>2</sub> +							
In <sub>2</sub>	(5.8±0.3) 0 K values.	(227)	(949)	93	389	79HUB/HER	61178-97-0
In <sub>2</sub> O +							
In <sub>2</sub> O	8.0±0.2  IP from 85KAP/L	(174) (175)	(728) (734)	−10 −9±5	−43 <i>−38±20</i>	82TPIS	12030-22-7
	II Holl okai /L						
Ir <sup>+</sup>							
Ir	9.02	367 <i>366.8</i>	1535 1534.6	159 <i>158.8</i>	665 664.3	82TN270	7439-88-5
	IP from 79RAU/A	ACK.					
IrO <sup>+</sup>							
IrO	(10.1) 0 K values.	(367)	(1535)	(134)	(561)	79HUB/HER	12030-48-7
IrO <sub>3</sub> +		-					
IrO <sub>3</sub>	(11.9)	(276)	(1156)	2	8	82TN270	12030-50-1
<b>Κ</b> +							
K	4.341	121.4 <i>121.6</i>	507.8 508.7	21.3±0.1 21.5±0.1	89.0±0.4 89.9±0.4	85JANAF	7440-09-7
KLi <sup>+</sup>		<del></del>	· · · · · · · · · · · · · · · · · · ·	<del></del>			
LiK	4.57±0.04 IP from 85KAP/S	123 CH.	514	17	73	86IGE/WED	12030-83-0
KNa <sup>+</sup>			<del></del>				·
NaK	4.41636±0.00017 IP from 81LEU/F	<i>134.2</i> IOF, 85KAF	<i>561.5</i> P/RAD. 0 K va	<i>32.4</i> lues.	135.4	86ZGE/WED	12056-29-0
κο+	<del></del>		<del></del>				
ко	7.09±0.1	178	745	15±5	61±21	83PED/MAR	12401-70-6
		179	747	15±5 -	. 63±21		
	IP from 82LEV/L	JA, 84BUT/	KUD.				
KRb +							
KRb	(3.9±0.1) IP from 85KAP/S	<i>(120)</i> CH. 0 K valu	<i>(500)</i> ies.	(30)	(124)	79HUB/HER	12333-39-0
K <sub>2</sub> +				<del></del>			
к <sub>2</sub> .	4.0637±0.0002	124.0	518.9	30.3	126.9	79HUB/HER	25681-80-5
~		124.8	522.3	31.1	130.3		
	IP from 85KAP/R 81LEU/HOF, 78F		-	-	ith values fron	n	
K <sub>2</sub> O K <sub>2</sub> O	4.96±0.2 IP from 84BUT/K	(80)	(336)	-34±4	-142±15	79BYK/ELI	12136-45-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ <sub>f</sub> <i>H</i> (Io	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
K <sub>2</sub> O <sub>2</sub> +							
K <sub>2</sub> O <sub>2</sub>	(5)	(44)	(184)	-71±4	-298±15	79BYK/ELI	17014-71-0
Kr <sup>+</sup>							
Kr	13.9997±0.00001	322.8	1350.8	0	0	*DEF	7439-90-9
•	See also: 81KIM,	<i>322.8</i> /KAT.	1350.8	0	0		
KrXe <sup>+</sup>					·		
KrXe	11.760±0.014	270.8	1132.9	-0.42	-1.77	79HUB/HER	12521-42-5
	See: 82DEH/PR	A, 85PRA/D	EH2. 0 K valu	es.			
Kr <sub>2</sub> +							
Kr <sub>2</sub>	12.866±0.003	296.3	1240.9	-0.36	-1.51	79HUB/HER	12596-40-6
	IP from 82PRA/I	DEH. U K Va	iues.				
La +							<b></b>
La	5.577	232 <i>231.7</i>	969 <i>969.4</i>	103 <i>103</i> .1	431 <i>431.3</i>	82TN270	7439-91-0
LaO+		.,					
LaO	4.90±0.1	84	352	-29±2	-121±10	83PED/MAR	12031-20-8
		85	354	-28	-119		
LaPt <sup>+</sup>							
LaPt	(5.4±0.8)	(243)	(1018)	119±5	497±21	81NAP/GIN	12142-67-5
	IP from 81NAP/	GIN. 					
Li+							
Li	5.392	<u>162.4</u>	<u>679.6</u>	38.1	159.4	82TN270	7439-93-2
	See also: 81NAK	<u>162.0</u> /ASA.	<u>678.0</u>	37.7	157.8		
d		-					
LiNa <sup>+</sup> LiNa	5.05±0.04	137	572	20	85	86IGE/WED	12333-49-2
Lii4a	IP from 85KAP/S		312	20	0.5	001GL/ E.D	12333 17-2
			<del></del>				• • • • • • • • • • • • • • • • • • • •
LiO <sup>+</sup> LiO	(8.45±0.20)	(214)	(894)	19±0.5	79±2	83PED/MAR	12142-77-7
	(0.1020.20)	(214)	(894)	19±0.5	79±2		
	See also: 81NAK	/ASA, 79WL	J/KUD, 84BU	T/KUD.			
LiOH <sub>2</sub> +							
LiOH <sub>2</sub>		69	289				
	From proton affi	nity of LiOH	(RN 1310-58-	3). PA = 241	kcal/mol, 100	7 kJ/mol.	
LiRb+							
LiRb	4.3±0.1	116	485	17	70	86IGE/WED	12031-70-8
	IP from 85KAP/S	SCH.					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	• .		$\Delta_{ m f} H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Li <sub>2</sub> +	5.1127±0.0003  IP from 83MCG	169.5 <i>169.4</i> /SCH. See a	709.2 <i>708.8</i> Iso: 82EIS/DEI	51.6±0.7 <i>51.5±0.7</i> M.	215.9±3.0 215.5±3.0	85JANAF	14452-59-6
Li <sub>2</sub> M <sub>0</sub> O <sub>4</sub> +	(9.7±0.5) Li	(-22)	(-94)	-246	-1030	81LIN/BES	
Li <sub>2</sub> O + Li <sub>2</sub> O	6.19±0.20 See also: 82IKE/	(103) <i>(103)</i> TAM, 81N <i>A</i>	(430) <i>(431)</i> AK/ASA, 79WL	−40 −40 J/KUD.	-167 -166	81LIN/BES	12057-24-8
Li <sub>2</sub> O <sub>2</sub> +	(7.88±0.2) IP from 79WU/K	<i>(84)</i> KUD. 0 K va	<i>(350)</i> lues.	-98±12	~410±50	79WU/KUD	12031-80-0
Li <sub>2</sub> O <sub>3</sub> Si <sup>+</sup> Li <sub>2</sub> SiO <sub>3</sub>	8.3±0.2 IP from 81NAK/	-99 ASA.	-415	-291	-1216	81NAK/ASA	
Li <sub>2</sub> O <sub>4</sub> W <sup>+</sup>							
Li <sub>2</sub> WO <sub>4</sub>	(9.2±0.5)	(-29)	(-122)	-241	-1010	81LIN/BES	
Li <sub>3</sub> O <sup>+</sup> Li <sub>3</sub> O	(4.54±0.2) IP from 79WU/K	<i>(50)</i> (UD. 0 K val	<i>(210)</i> lues.	-54±10	-228±42	79WU/KUD	69235-02-5
Lu+							
Lu	5.4259±0.00001	227 227.4	951 <i>951.3</i>	102 102.2	428 <i>427.8</i>	82TN270	7439-94-3
LuO+							
LuO	(6.79±0.1)	(153) <i>(153)</i>	(640) <i>(642)</i>	-3.5 -3	-14.6 - <i>13</i>	82TN270	12032-02-9
	A value of 2±17 k 298 K heat of for						
Md+					<del></del>		
Md	6.74±0.12						7440-11-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{\mathbf{f}}H(Nc)$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mo		_	kJ/mol	reference	number
Mg <sup>+</sup>							
Mg	7.646	<u>211.6</u>	<u>885.4</u>	35.3	147.7	82TN270	7439-95-4
•	See also: 81SAS/F	<u>211.3</u> IAR.	<u>884.2</u>	35.0	146.5		
MgO <sup>+</sup>		·····			· · · · · · · · · · · · · · · · · · ·		
MgO	9.7	(236±8)	(997±33)	13.4	56.1	79HUB/HER	1309-48-4
		(238±8)	(997±33)	13.5	56.5		
	Δ <sub>f</sub> H(Ion) from 81 IP is Δ <sub>f</sub> H(Ion) - Δ			IUR.			
Mg <sub>2</sub> H <sup>+</sup>			•				
MgHMg		78	327				
	From proton affin	ity of Mg <sub>2</sub>	(RN 29904-79-	8). PA = (21	9) kcal/mol, (91	6) kJ/mol.	
Mn <sup>+</sup>							
Mn	7.435	239	998	67	281	82TN270	7439-96-5
		238	996	67	279		
MnO <sup>+</sup>							
MnO	8.65±0.2	(240)	(1005)	41	170	67CHE/BAR	1344-43-0
	IP from 82ARM/I	IAL. See a	ilso: 81ARM/H	AL, 81KAP/S	TA. 0 K values		
Mn <sub>2</sub> +							
Mn <sub>2</sub>	. 6.9±0.4	(280)	(1172)	(121±7)	(506±29)	83ERV/LOH	12596-53-1
	IP from 83ERV/L	OH. 0 K v	alues.				
Mo <sup>+</sup>							
Мо	7.099	321.0	1343.1	157.3	658.1	82TN270	7439-98-7
		320.6	1341.5	156.9	656.6		
MoNa <sub>2</sub> O <sub>4</sub> +			·· ——-				
Na <sub>2</sub> MoO <sub>4</sub>	(7.2)	(-87)	(~364)	-253	-1059	82TN270	
MoO+			•				
MoO	(8.0±0.6)	(267)	(1119)	83±5	347±21	83PED/MAR	12058-07-0
		(267)	(1119)	83±5	347±21		
MoO <sub>2</sub> +							
MoO <sub>2</sub>	(9.2)	(213)	(890)	-2±3	-8±13	85JANAF	
		(213)	(892)	−2±3	-6±13		
MoO <sub>3</sub> +							
J	(11.0.0.6)	(186)	(777)	-87	-362	81WOO	1313-27-5
MoO <sub>3</sub>	(11.8±0.5)	(100)	(,,,,	•	-358		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ <sub>f</sub> <i>H</i> (Ic	on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Mo <sub>2</sub> O <sub>6</sub> +							
000	) 121.00	(201)	(0.41)	70	226	00/73/10/70	12412 10 0
Mo	12.1±0.6 IP from 77ROS/L	(201) DRA, 85KAI	(841) P/LEL.	<del>-</del> 78	-326	82TN270	12412-19-0
0 0		•					
			<u> </u>				
Mo <sub>3</sub> O <sub>9</sub> +							
Mo Mo	(12.0±1.0)	(-174)	(-729)	-451	-1887	82TN270	12163-83-6
0,400	See also: 85KAP/	LEL.					
N <sup>+</sup>							
N	14.534	448.2	1875.0	113.0	472.7	82TN270	17778-88-0
		447.7	1873.1	112.5	470.8		
NO <sup>+</sup>							
NO	9.26436±0.00006	235.33	984.61	21.82	91.28	82BAU/COX	10102-43-9
	See: 83SEA/CHU	<u>235.33</u> I, 84MUL/S	<u>984.65</u> AN, 83EBA/A	21.69 ANE for confirm	<i>90.78</i> ning high pre	cision	
	measurements. S						
NO <sub>2</sub> +							
NO <sub>2</sub>	9.75±0.01	233	974	7.9	33.2	82BAU/COX	10102-44-0
		233	977	8.6	36.0		
	Ionization involve weak onset. Selec						
	C <sub>6</sub> H <sub>5</sub> CF <sub>3</sub> + N						
NP <sup>+</sup>							
NP	11.85	298	1248	25±1	105±5	85JANAF	17739-47-8
		299	1249	25±1	106±5		
ns+		······					
NS	8.87±0.01	268	1119	63±25	264±105	85JANAF	51801-08-2
	ID C COLLID C	268	1119	63±25	263±105		
	IP from 79HUB/I	16K.		···			
NTi <sup>+</sup>							
TiN	(6) 0 K values.	(250)	(1045)	112	466	79HUB/HER	25583-20-4
NZr+							
ZrN	(7.9±0.4)	(352.7)	(1475.6)	170.5	713.4	85JANAF	25658-42-8
		(352.9)	(1476.5)	170.7	714.3		_

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{\rm f}H({ m New}$	itral)	Neutral	CAS registry
Neutral	eV		kJ/mol	kcal/mol		reference	number
N <sub>2</sub> +							
N <sub>2</sub>	15.5808	359.3	1503.3	0	0	*DEF	7727-37-9
- 12		359.3	1503.3	0	0		
	IP from 79HUB/F	IER. See a	ilso: 84STE/MA	AR, 81ARM/TA	.R, 81KIM/KA	AT.	
N <sub>2</sub> O + ·							
N <sub>2</sub> O	12.886	316.8	1325.4	19.6	82.1	82BAU/COX	10024-97-2
<b>-</b>		317.6	1328.8	20.4	<i>85.5</i>		
	See also: 81KIM/F	CAT.					
N <sub>2</sub> O <sub>4</sub> +							
N <sub>2</sub> O <sub>4</sub>	10.8±0.2	(251)	(1051)	2	9	82BAU/COX	10544-72-6
2 4		(254)	(1061)	5	19		
	See also: 82CHO/	FRO.	•				
N <sub>2</sub> O <sub>5</sub> +							
N <sub>2</sub> O <sub>5</sub>	(11.9)	(277)	(1159)	3	11	82BAU/COX	10102-03-1
		(280)	(1173)	6	25		
	IP is onset of phot	oelectron	band.				
Na <sup>+</sup>							
Na	5.139	<u>144.1</u>	<u>603.1</u>	25.6±0.2	107.3±0.7	85JANAF	7440-23-5
		<u>144.2</u>	<u>603.4</u>	25.7±0.2	107.6±0.7		
	See also: 84PET/I	)AO.					
NaO <sup>+</sup>							
NaO	(7.41)	(190.9)	(798.7)	20.0±10.0	83.7±41.8	85JANAF	12401-86-4
		(191.2)	(800.0)	20.3±10.0	85.0±41.8		
	IP from 84BUT/K	UD.					
NaRb <sup>+</sup>							
NaRb	4.32±0.04	115	481	15	64	86IGE/WED	12333-61-8
	IP from 85KAP/S	CH.					
Na <sub>2</sub> +							
Na <sub>2</sub>	4.88898±0.00016	146.7	613.8	34.0±0.3	142.1±1.2	85JANAF	25681-79-2
_		<u>147.3</u>	<u>616.3</u>	34.6±0.3	144.6±1.2		
						AP/RAD, 84PET/I	DAO,
	78HER/SCH. Δ <sub>f</sub> l	H(Ion) in a	igreement with	that derived fro	m data of 83V	VAG/ISE.	
Na <sub>2</sub> Cl <sup>+</sup>							
Na <sub>2</sub> CI	4.15±0.22	(59)	(245)	-37	-155	83PET/DAO	
	IP from 83PET/D.	AO. 0 K va	alues.				
Na <sub>2</sub> O <sup>+</sup>							
Na <sub>2</sub> O	(5.06±0.4)	(110)	(461)	<b>-</b> 6	-27	83PET/DAO	1313-59-3
~	•	(111)	(465)	<b>-</b> 5	-23		
	IP from 83PET/D.	AO. See al	lso: 84BUT/KU	D.			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Nb+							
Nb	6.88	334 <i>333</i>	1397 <i>1394</i>	175±2 174.5±2	733±8 <i>730±8</i>	85JANAF	7440-03-1
NbO +					<del></del>		
NbO	(6.1)	(187±53)	(778.5±222) (780±222)	48±5 48±5	200±21 199±21	85JANAF	12034-57-0
	Δ <sub>f</sub> H(Ion) from 81	KAP/STA.	IP is Δ <sub>f</sub> H(Ion)	- Δ <sub>f</sub> H(Neutra	al). 		
Nd+							
Nd	5.5250±0.0006	205.80 206.04	861.08 <i>862.08</i>	78 <i>78.5</i>	328 <i>328.6</i>	82TN270	7440-00-8
NdO +							
NdO	(4.97±0.1)	(84) <i>(84)</i>	(354) <i>(354)</i>	-30±3 -30±3	-126±12 -126±12	83PED/MAR	12035-20-0
Ne <sup>+</sup>							
Ne	21.56471±0.00001	497.29 497.29	2080.66 2080.66	0 <i>0</i>	0 0	*DEF	7440-01-9
NeKr <sup>+</sup>				·			
NeKr	(13.950±0.003) IP from 82PRA/D	<i>(321.5)</i> EH2. 0 K v	<i>(1345.3)</i> alues.	-0.15	-0.62	79HUB/HER	
NeXe+							
NeXe	(12.094±0.004) IP from 82PRA/D	<i>(278.7)</i> EH2. See a	<i>(1166.3)</i> lso: 85PRA/DE	<i>−0.15</i> EH2. 0 K value	<i>-0.63</i> es.	79HUB/HER	58984-40-0
Ne <sub>2</sub> +							-
Ne <sub>2</sub>	20.33±0.08 IP from 84TRE/P0	<i>469</i> OL. See also	<i>1961</i> o: 79HUB/HER	-0.047 0 K values.	-0.195	79HUB/HER	12185-05-6
Ni <sup>+</sup>	· . · · · · · · · · · · · · · · · · · ·						
Ni	7.635	278.9 <i>278.</i> 4	1166.8 <i>1164.8</i>	102.8 102.3	430.1 428.1	82TN270	7440-02-0
	See also: 82DYK/0	GRA.					
NiO +							
NiO	9.5±0.2 IP from 81ARM/F	(290) IAL, 82AR	(1214) M/HAL, 77ROS	71±4 5/DRA. See a	297±17 ilso: 81KAP/S	83PED/MAR TA.	1313-99-1
No <sup>+</sup>							
No	6.84±0.12						10028-14-5
Np +	6 2657-0 0005	256	1070	111	465	85KLE/WAR	7439-99-8
Np	6.2657±0.0005	<i></i>	10/0			OKLE/WAR	1437-77-0
<b>NpO <sup>+</sup></b> NpO	(5.7±0.1)	(130)	(546)	-1±10	-4±42	83PED/MAR	12202-03-8

Table 1. Positive Ion Table - Continued

		. I OSILIV					
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(Ic kcal/mol		Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
o+					77.4		
O	13.618	373.6 <i>373.0</i>	1563.1 1560.7	59.6 <i>59.0</i>	249.2±0.1 246.8±0.1	85JANAF	17778-80-2
OP+	37.774784				······································		
P,O	8.39±0.01	186 <i>186</i>	777 778	-8±3 -8	-33±13 -32	83PED/MAR	14452-66-5
	IP from 82DYK/	MOR. See al	so: 81BAL/G	iG.			
OPb +							
РьО	9.08±0.10	224 227	939 <i>949</i>	15±3 <i>17</i>	63±13 <i>73</i>	79HUB/HER	1317-36-8
	See also: 83SEM	/RYK, 84NIK	VOVC.				
OPd+			<del></del>				
PdO	(9.1) 0 K values.	(293)	(1224)	83	346	79HUB/HER	1314-08-5
OPr+					·····		<del></del>
PrO	(4.90±0.1)	(79) <i>(75)</i>	(331) <i>(314)</i>	−34±4 −38	-142±17 -159	82TN270	12035-81-3
OPt+							
PtO	(10.1±0.3)	(334) <i>(339)</i>	(1397) <i>(1417)</i>	101 <i>106</i>	423 443	79HUB/HER	12035-82-4
ORb+				***************************************			
RbO	6.69	168.6 168.9	705.3 706.6	14.3 <i>14.6±5</i>	59.8 <i>61.1±20</i>	82TPIS	12509-27-2
	IP from 84BUT/F		700.0	14.013	01.1120		
ORb <sub>2</sub> +			<del></del>				
Rb <sub>2</sub> O	4.63	25.8	107.8		-338.9±8.4	82TPIS	18088-11-4
	IP from 84BUT/F	<i>26.7</i> KUD.	111.6	-80.1	<b>-335.1</b>		
ORh <sup>+</sup>							
RhO	(9.3)	(309)	(1294)	95±10	397±42	83PED/MAR	12137-18-7
ORu <sup>+</sup>		<del></del>				******	
RuO	(8.7)	(290)	(1211)	89±10	372±42	83PED/MAR	12143-05-4
os+					-		
so	10.32±0.02	239.2	1000.7	1.2±0.3	5.0±1.3	85JANAF	13827-32-2
		239.2	1000.7	1.2±0.3	5.0±1.3		
os <sub>2</sub> +		•			<del></del>		
s <sub>2</sub> o	10.54±0.04	231	965	-12±0.2	-52±1	86NIM/ELL	20901-21-7
-		230	962		-55±1		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	$\Delta_{\mathbf{f}}H(Nc)$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
OSi +	· · · · · · · · · · · · · · · · · · ·		<del></del>				
SiO	11.43	239.6	1002.4	-24.0±2	-100.4±8.4	85JANAF	10097-28-6
	••• • • • • • • • • • • • • • • • • • •	239.3	1001.2	-24.3±2	−101.6±8.4		
	IP from 82LEV/I	JIA, 79HUE	HER. Sec a	lso: 81NAK/AS	'A.		
OSm +							
SmO	5.55±0.1	100	418	-28±3	-117±12	83PED/MAR	12035-88-0
		97	405	-31	-130		
OSn+							
SnO	9.60±0.02	226	944	4.2	17.5	81LAU/BRI	21651-19-4
	<b></b>	226	945	4.6	19.2		
	IP from 82DYK/N	MOR2.					
OSr+	·						*****
SrO	7.0±0.15	(158.2)	(662.8)	-3.2±4	-13.4±16.7	85JANAF	1314-11-0
	A 99/9 L A	(158.7)	(663.9)	-2.7±4	-11.5±16.7		
	Δ <sub>f</sub> H(Ion) from or	iset of endo	thermic reacti	on (83MUR);I	$P$ is $\Delta_{\mathbf{f}}H(Ion)$ -	$\Delta_f H$ (Neutral).	
OTa +							
ТаО	(7.92±0.1)	(228.6)	(956.7)	46.0±15	192.5±62.8	85JANAF	12035-90-4
		(228.9)	(957.9)	46.3±15	193.7±62.8		
OTb <sup>+</sup>		•					
ТьО	(5.62±0.1)	(113)	(471)	-17±3	-71±12	83PED/MAR	12035-91-5
		(111)	(463)	-19	-79		
ОТе <sup>+</sup>		****		3979			
TeO	8.72	218	910	16±5	69±21	83PED/MAR	13451-17-7
		218	912	17	71	337	
OTh <sup>+</sup>					· · · · · · · · · · · · · · · · · · ·		
ThO	6.1±0.1	(133)	(557)	-7±2	-31±10	83PED/MAR	12035-93-7
-		(134)	(559)	-7±2 -7	-29	OUI ED/MINIC	12033-73-1
on t						·	
OTi <sup>+</sup> TiO	6 56±0 00	164.2	607.2	10.0.00	E4.4.0.4	057437455	40407.00.4
110	6.56±0.03	164.3 <i>164.2</i>	687.3 <i>686.8</i>	13.0±2.0 <i>12.9±2.0</i>	54.4±8.4 53.9±8.4	85JANAF	12137-20-1
	IP from 84DYK/G					G, 81KAP/STA.	
om +							
O <b>Tm <sup>+</sup></b> TmO	(6.44±0.1)	(120)	(5/2)	10	70	DOTTE LOTTO	10001 00 0
TillO	(6.44±0.1) See also: 80MUR/I		<i>(542)</i> ues.	-19	<i>–79</i>	82TN270	12281-29-7
	277 11.20. 00.1101(1						
ou+							
UO	(5.65±0.2)		(570)	6±2	25±10	83PED/MAR	12035-97-1
		(136)	(568)	6	23		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ <sub>f</sub> <i>H</i> (1	(on)	Δ <sub>f</sub> H(Ne	utral)	Neutral	CAS registry
Neutral	eV	-	l kJ/mol	kcal/mol		reference	number
ov+							
VO	(7.5)	(203.4)	(851.2)	30.5±5.0	127.6±20.9	85JANAF	12035-98-2
	(10)	(203.5)	(851.4)	30.5±5.0	127.8±20.9		
	$\Delta_{\mathbf{f}}H(\operatorname{Ion})$ from or				RI/ARM, 85E	LK/ARM).	
	IP is $\Delta_{\mathbf{f}}H(\operatorname{Ion})$ - $L$	\_fH(Neutr	al). See also: 811	KAP/STA.			
ow+							
wo	(9.1±1)	(311.5)	(1303.1)	101.6±10.0	425.1±41.8	85JANAF	12035-99-3
		(311.6)	(1303.7)	101.7±10.0	0 425.7±41.8		
OY <sup>+</sup>						· · · · · · · · · · · · · · · · · · ·	
YO	5.85±0.15	124	518	-11±2	-46±10	83PED/MAR	12036-00-9
		124	519	-11	-45	·	
	See also: 80MUR	/HIL.	•				
OYb +			<del></del>			<u>, ,</u>	
YbO	(6.55±0.1)	(147)	(615)	-4±2	-17±8	83PED/MAR	25578-79-4
	•						
OZn+		44.EE (1)	4464 BB				
ZnO	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from 81	(275±8) Karista	(1151±33)				
	<u> </u>		. O IX Varacs.				
OZr <sup>+</sup>							
ZrO	(6.1±0.3)	(154.7)	(647.1)		58.6±50.2	85JANAF	12036-01-0
	0 1 0477 1 704	(154.9)	(648.2)	14.2±12.0	59.6±50.2		
	See also: 81KAP/	SIA.					
O <sub>2</sub> +							
- o <sub>2</sub>	12.071±0.001	278.5	1165.3	0	0	*DEF	7782-44-7
		278.4	1164.7	0	0		
	See also: 81KIM/I	KAT.					
O <sub>2</sub> P+							
PO <sub>2</sub>	(10.5±0.1)	(175)	(733)	-67	-280	85JANAF	12164-97-5
-		(176)	(736)	-66	-277		
O <sub>2</sub> Pt+				·	<del></del>		
PtO <sub>2</sub>	(11.2±0.3)	(299)	(1253)	41	172	82TN270	1314-15-4
	()	·		· <del>-</del>	-· <del>-</del>		
O <sub>2</sub> Rh +							
RhO <sub>2</sub>	(10.0)	(275)	(1149)	44	184	82TN270	12137-27-8
O <sub>2</sub> S+				<del></del>	·····		
SO <sub>2</sub>	12.32±0.02	213	892	-70.9±0.1	-296.8±0.2	85JANAF	7446-09-5
<b>L</b>		214	894		-294.3±0.2		
	See also: 81SMI/S	TE, 840RI	/SRI, 81KIM/K				
O <sub>2</sub> Sn <sub>2</sub> +							
Sn <sub>2</sub> O <sub>2</sub>	(9.8±0.5)	(166)	(695)	-60	-251	82TN270	12534-17-7
2~2	(/	(-50)	()				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		Δ <sub>f</sub> H(No		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
O <sub>2</sub> Th +							
ThO <sub>2</sub>	(8.7±0.15)	(82)	(341)	-119	-498	82TN270	1314-20-1
-	, ,	(82)	(344)	-118	-495		
O <sub>2</sub> Ti <sup>+</sup>			***************************************				
TiO <sub>2</sub>	(9.54±0.1)	(149)	(625)	(-71)	(-299)	85BAL/GIG	13463-67-7
-		(149)	(623)	(-71)	(-297)		
	See also: 82BAN/	СНА, 85ВА	L/GIG.				
O <sub>2</sub> U+		·					
UO <sub>2</sub>	(5.4±0.1)	(13)	(55)	-111±1	-466±5	80GRE	1344-57-6
-	, ,	(14)	(57)	-111	-464		
O <sub>2</sub> W <sup>+</sup>							
wo <sub>2</sub>	(9.6±0.3)	(240)	(1003)	18±6	77±29	85JANAF	12036-22-5
-	•	(240)	(1005)	19±6	79±29		
	See also: 81BAL/0	GIG.					
O <sub>2</sub> Zr <sup>+</sup>							
ZrO <sub>2</sub>	(9.5±0.3)	(151)	(631)	-68±11	-286±46	85JANAF	1314-23-4
_		(150)	(629)	-68±11	-284±46		•
O <sub>3</sub> +							
O <sub>3</sub>	12.43	321	1342	34	143	82TN270	10028-15-6
3		321	1344	35	145		
	IP from 84KAT/SI	HI.					
O <sub>3</sub> Ru <sup>+</sup>						****	
RuO <sub>3</sub>	(11.2)	(240)	(1003)	-19	<b>78</b>	82TN270	12036-36-1
0 <sub>3</sub> s+			<del>/</del>				
SO <sub>3</sub>	12.80±0.04	200	839	-94.6±0.2	-395.8±0.7	85JANAF	7446-11-9
5		202	845		-390.0±0.7	10 BB	
	See also: 81SMI/S	re.					
O <sub>3</sub> Sn <sub>3</sub> +				•			
Sn <sub>3</sub> O <sub>3</sub>	(9.8±0.5)	(100)	(419)	-126	-527	82TN270	12534-28-0
O <sub>3</sub> Ti <sub>2</sub> +	7.77						<del></del>
Ti <sub>2</sub> O <sub>3</sub>	(8.3±0.5)	(39)	(164)	(-152)	(-636)	85BAL/GIG2	1344-54-3
2-3	IP from 85BAL/G			(-102)	( 0.0)	WDALJOIUZ	エンナオ・シサ・ン
			<b></b>			······································	
O <sub>3</sub> U+	440 - 5 - 5						
UO <sub>3</sub>	(10.5±0.5)	(51)	(213)	-191±5	-800±20	80GRE	1344-58-7
0 <sub>3</sub> w+		-					
wo <sub>3</sub>	(11.8±0.6)	(202)	(846)	<b>-7</b> 0	-293	81WOO	1314-35-8
		(203)	(851)	-69	-288		
	See also: 81BAL/G	iG.					

Table 1. Positive Ion Table - Continued

Tubic	2. 2.051	THE TON TUDE	e - Contin			
Ionization potential eV			•		Neutral reference	CAS registry number
12.320	204	852	-81	-337	82TN270	20816-12-0
12.15±0.03	236 238	988 <i>994</i>	44 43	-184 178	82TN270	20427-56-9
(10.8) 0 K values.	(41)	(172)	-208	-870	82TN270	14553-36-7
(9.2±0.5)	(19)	(80)	-193	-808	82TN270	
(9.4)	(-33)	(-139)	-250	-1046	76DEL/HAL	
(10.5±0.5) 0 K values.	(-19)	(-79)	(-261)	(-1092)	85BAL/GIG3	
(8.4) 0 K values.	(-75)	(-315)	-269	-1125	82TN270	
(9.5) IP is onset of photo	(-293) <i>(-288)</i> toelectron	(-1227) <i>(-1203)</i> s band.	-512±8 <i>-507±6</i>	-2144±33 <i>-2120±33</i>	85JANAF	10248-58-5
					·	
(12.2±0.2)	(3) (4)	(11) (17)	-278 -277	-1164 -1158	85JANAF	12165-16-1
(12.7±0.2)	(30)	(124)	-263	-1101	81WOO	1314-68-7
(12.0±0.2)	(-191)	(-800)	-468	-1958	82TN270	12165-37-6
	Ionization potential eV  12.320  12.15±0.03  (10.8) 0 K values.  (9.2±0.5)  (9.4)  (10.5±0.5) 0 K values.  (8.4) 0 K values.  (9.5)  IP is onset of photonomic photonomic properties of the photonomic	Ionization potential eV kcal/me  12.320 204  12.15±0.03 236 238  (10.8) (41) 0 K values.  (9.2±0.5) (19)  (9.4) (-33)  (10.5±0.5) (-19) 0 K values.  (8.4) (-75) 0 K values.  (9.5) (-293) (-288) IP is onset of photoelectron  (12.2±0.2) (3) (4)	Ionization potential eV       Δ <sub>f</sub> H(Ion) kd/mol         12.320       204       852         12.15±0.03       236 988 238 994         (10.8) (41) (172) 0 K values.       (41) (172)         (9.2±0.5) (19) (80)         (9.4) (-33) (-139)         (10.5±0.5) (-19) (-79) 0 K values.         (8.4) (-75) (-315) 0 K values.         (9.5) (-293) (-1227) (-288) (-1203) IP is onset of photoelectron band.         (12.2±0.2) (3) (11) (4) (17)	Ionization potential eV         Δ <sub>f</sub> H(Ion) kcal/mol         Δ <sub>f</sub> H(Nol         Δ <sub>f</sub> H(Nol	Ionization potential eV         Δ <sub>I</sub> H(Ion) kal/mol         Δ <sub>I</sub> H(Neutral) kal/mol           12.320         204         852         -81         -337           12.15±0.03         236         988         -44         -184           238         994         -43         -178           (10.8)         (41)         (172)         -208         -870           (9.2±0.5)         (19)         (80)         -193         -808           (9.4)         (-33)         (-139)         -250         -1046           (10.5±0.5)         (-19)         (-79)         (-261)         (-1092)           0 K values.         (-75)         (-315)         -269         -1125           (9.5)         (-233)         (-1207)         -512±8         -2144±33           (9.5)         (-288)         (-1203)         -507±6         -2120±33           IP is onset of photoelectron band.         (12.2±0.2)         (3)         (11)         -278         -1164           (12.7±0.2)         (30)         (124)         -263         -1101	Ionization potential eV   ApH(Ion)   Keal/mol   KJ/mol   Keal/mol   KJ/mol   Real/mol   KJ/mol   Real/mol   KJ/mol   Real/mol   KJ/mol   Real/mol   Real/mol   KJ/mol   Real/mol   Real/mol   Real/mol   KJ/mol   Real/mol   Real/mol   KJ/mol   Real/mol   Real/mol   KJ/mol   Real/mol   R

Table 1. Positive Ion Table - Continued

			ve foil Table	Collen			
ION Neutral	Ionization potential eV	Δ <sub>f</sub> H(I kcal/mol	on) kJ/mol	Δ <sub>f</sub> H(No kcal/mol	cutral) kJ/mol	Neutral reference	CAS registry number
O <sub>10</sub> P <sub>4</sub> +					*****		· · · · · · · · · · · · · · · · · · ·
OR OPPO	(13.3±0.2)	(-371) (-363)	(-1551) (-1517)	-677±2 -669±2	−2834±9 −2800±9	85JANAF	16752-60-6
O <sub>12</sub> W <sub>4</sub> +				- 1 <del>- 1</del> - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1			
	(12.0±0.2)	(-372)	(-1557)	-649	-2715	82TN270	12165-45-6
Os <sup>+</sup>							
Os	8.28 IP from 79RAU/	380 ACK.	1590	189	791	82TN270	7440-04-2
<b>p</b> +							
P	10.486	317 <i>317</i>	1328 <i>1328</i>	75.6±0.2 75.4±0.2	316.4±1.0 315.6±1.0	85JANAF	7723-14-0
PS+	· · · · · · · · · · · · · · · · · · ·		<del></del>			· · · · · · · · · · · · · · · · · · ·	
PS	(9.0)	(245) <i>(245)</i>	(1024) (1024)	36±1 <i>36</i> ±1	151±4 <i>151±4</i>	79HUB/HER	12281-36-6
PSe+			<u>,</u>				
PSe	(8.2) 0 K values.	(232)	(971)	43	180	79HUB/HER	12509-41-0
P <sub>2</sub> +		· · · · · · · · · · · · · · · · · · ·	*				<u> </u>
P <sub>2</sub>	10.53	(277.2)	(1159.7)	34.3±0.5	143.7±2.1	85JANAF	12185-09-0
	IP from 79HUB/F	<i>(277.6)</i> IER.	(1161.5)	34.8±0.5	145.5±2.1		
P <sub>3</sub> +							
P <sub>3</sub>	(7.85±0.2)	(241)	(1006)	59.4±4	249±16	74BEN/MAR	55030-78-9
P4+	·····						
PPP	9.08±0.05	223 225	935 <i>942</i>	14±0.5 16±0.5	59±2 66±2	85JANAF	12185-10-3
Pa+							
Pa	5.89±0.12	270	1131	135	563	85KLE/WAR	7440-13-3

Table 1. Positive Ion Table - Continued

ION	Y-1	, A 27/7		A 77/2*		NI <sub>2</sub> , 4 - 1	CAS registre
Neutral	Ionization potentia	l Δ <sub>f</sub> H(Iα kcal/mol		∆ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number
 Pb <sup>+</sup>							
Pb '	7.416	217.6	910.5	46.6	195.0	82TN270	7439-92-1
		217.8	911.1	46.8	195.6	2233.4.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	See also: 83SEN	A/RYK, 84NII	K/OVC.				
PbS +							
Ры́S	(8.5±0.5)	(228)	(954)	32	134	79HUB/HER	1314-87-0
		(229)	(956)	32	136		
PbSe +					·····		
PbSe	(8.4±0.5)	(224)	(935)	30	125	79HUB/HER	12069-00-0
	0 K values.						
PbTe +							
PbTe	(≤8.04)	(≤220)	(≤922)	35	146	79HUB/HER	1314-91-6
	0 K values.						
Pb <sub>2</sub> +							
Pb <sub>2</sub>	(6.1±0.3)	(214)	(897)	(74)	(308)	79HUB/HER	12596-92-8
		(215)	(901)	(75)	(312)		
	IP from 82SAI/	YAM. 					
Pd+							
Pd	8.34	283	1183	90	378	82TN270	7440-05-3
		282	1182	90	377		
PdSi <sup>+</sup>							
PdSi	(8.4±0.5)	(318)	(1329)	124	519	79HUB/HER	12137-77-8
	0 K values.						
Pd <sub>2</sub> +							
Pd <sub>2</sub>	(7.7±0.3)	(341)	(1426)	163	683	79HUB/HER	12596-93-9
	0 K values.						
Pm <sup>+</sup>		· · · · · · · · · · · · · · · · · · ·					<u> </u>
Pm	5.582						
Pr+			•				<del></del>
Pr	5.464±0.006	211	883	85	356	82TN270	7440-10-0
		211.2	883.9	85.2	356.7		
Pt+							
Pt ·	8.61	334	1396	135	565	82TN270	7440-06-4
••	U.U.	333	1395	134.9	564.4		
	IP from 79RAU,						
Pu+							
Pu Pu	6.03±0.10	222	927	82.5	345	85KLE/WAR	7440-07-5
	IP from 81CHE/			· <del>=</del> -=			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		∆ <sub>f</sub> H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/moi	reference	number
Ra <sup>+</sup>							
Ra	5.279 IP from 70MOO.	160	668	38	159	82TN270	7440-14-4
Rb <sup>+</sup>			<del></del>				
Rb	4.177	116 <i>116</i>	484 <i>485</i>	19.3±0.1 19.6±0.1	80.9±0.4 82.2±0.4	85JANAF	7440-17-7
Rb <sub>2</sub> +				· · · · · · · · · · · · · · · · · · ·		<del></del>	·· · · · · · · · · · · · · · · · · · ·
Rb <sub>2</sub>	(3.9±0.1)	(117.0)	(489.6)	27.1±0.6	113.3±2.5	85JANAF	
	IP from 85KAP/S	<i>(118.0)</i> CH.	(493.6)	28.0±0.6	117.3±2.5		
Re <sup>†</sup>							
Re	7.76	363	1519	184	770	82TN270	7440-15-5
	IP from 79RAU/A	<i>363</i> .CK.	1518	184	769		
				· · · · · · · · · · · · · · · · · · ·			
Rh '	7.46	305	1275	133	557	82TN270	7440-16-6
		305	1275	133	556		
	See also: 81HAQ/	GIN.				····	
RhTi <sup>+</sup>							
TiRh	(8.2±1.0) 0 K values.	(342)	(1431)	153	640	79HUB/HER	12600-90-7
Rh <sub>2</sub> + Rh <sub>2</sub>	(7.1±1.0)	(363)	(1518)	199	833	79HUB/HER	12596-98-4
- 42	0 K values.	(555)	(1510)	277	000	MIODITER	12570-70-4
Rn <sup>+</sup>				······································			
Rn	10.748	247.9	1037.0	0	0	*DEF	10043-92-2
	IP from 70MOO.	247.9	1037.0	0	0		
						······································	
Ru <sup>+</sup>	(7.27)	(224)	(1054)	154	£ 12	OOFF IOTO	<b>5440.40.0</b>
Ru	(7.37)	(324) <i>(323)</i>	(1354) (1352)	154 <i>153</i>	643 <i>641</i>	82TN270	7440-18-8
s+							
S	10.360	305	1275	66.2±0.1	277.0±0.3	85JANAF	7704-34-9
	6 L	<i>304</i>	1272	65.6±0.1	274.7±0.3		
	See also: 86LIA/N	G, 79DUN/	DYK.		·		
SSe <sup>+</sup>							
SeS	(9.2±0.2)	<i>(243)</i> IE, 77LEV	(1015)	<i>30</i>	127	83GRA/WIE	7446 <b>-</b> 34-6

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	∆ <sub>f</sub> H( kcal/mo	(Ion) ol kJ/mol	Δ <sub>f</sub> H(Ne kcal/mol		Neutral reference	CAS registry number			
SSn <sup>+</sup>										
SnS	(8.8) IP is onset of photon	(231) toelectron	(968) 1 band.	28	119	82TN270	1314-95-0			
STi <sup>+</sup>										
TiS	(7.1±0.3)	(237)	(990)	73	305	82TN270	12039-07-5			
SY+										
YS	(6.0)	(180) <i>(180)</i>	(754) <i>(755)</i>	42 <i>42</i>	175 <i>176</i>	82TN270	12210-79-6			
S <sub>2</sub> +	and the second s				· · · · · · · · · · · · · · · · · · ·					
s <sub>2</sub>	9.356±0.002	246.5 246.4	1031.3 1031.0	30.7±0.1 30.7±0.1	128.6±0.3 128.3±0.3	85JANAF	23550-45-0			
	IP from 86LIA/NO									
S <sub>3</sub> +						<u></u>	<u></u>			
S <sub>3</sub>	(9.68±0.03) See also: 83ROS/0	(257) GRA.	(1076)	34±2	142±8	85JANAF	12597-03-4			
S <sub>4</sub> +						The state of the s				
s—s 	(10.1) $\Delta_{ extit{f}} H$ (Ion) from ap	(270) pearance	(1131) potential of 11.	35±2 94±0.05 in S <sub>6</sub> . I	146±8 P from 83ROS	85JANAF /GRA.	19269-85-3			
S <sub>5</sub> +										
s—s s_s	(8.60±0.05) See also: 83ROS/0	(224) GRA.	(939)	26±2	109±8	85JANAF	12597-10-3			
S6 <sup>+</sup>										
S S S S S S S S S S S S S S S S S S S	(9.00±0.03) See also: 83ROS/0	(232) GRA.	(971)	24±2	102±8	85JANAF	13798-23-7			
S <sub>7</sub> +					,					
5 <sup>-5</sup> -5 5 5-5	(8.67±0.03) See also: 83ROS/C	(227) GRA.	(951)	27±2	114±8	85JANAF	21459-04-1			

Table 1. Positive Ion Table - Continued

	Table	Table 1. Positive for Table - Continued							
ION	Ionization potential	Δ <sub>f</sub> H(Id		$\Delta_{\mathbf{f}}H(Ne)$		Neutral	CAS registry		
Neutral	eV	kcai/mol	kJ/mol	kcal/mol	KJ/MOI	reference	number		
s <sub>8</sub> +									
ss\_	(9.04±0.03)	(232)	(972)	24.0±0.2	100.4±0.6	85JANAF	10544-50-0		
\$ \$ 	(5.0420.05)	(233)	(976)	25.0±0.2	104.4±0.6		100 11100		
5, 5 S-5	See also: 83ROS/		. ,						
Sb <sup>+</sup>		·							
Sb	8.641	261.9	1096.0	62.7	262.3	82TN270	7440-36-0		
		261.9	1095.7	62.6	262.0				
	It has been sugge	sted (83MA	Z) that this va	luc of the IP is	too high.				
Sb <sub>2</sub> +									
Sb <sub>2</sub>	(9.3±0.2)	(271)	(1133)	56	236	82TN270	32679-33-7		
		(271)	(1134)	57	237				
	The cited ionizati	-	-	-					
	Threshold determ			s of 8.4±0.3, 8.6	4±0.06,				
	8.7±0.3, 8.9±0.3, a	nd 9.5±0.5 e	v.						
Sb <sub>4</sub> <sup>+</sup>						- <del></del>			
/I\	(7.40±0.10)	(220)	(919)	49	205	82TN270	12597-17-0		
	(7.4010.10)	(221)	(924)	50	210	02111210	1207, 17 0		
Sb Sb	IP from 84ELB/K		()						
Sb									
Se <sup>+</sup>									
Sc	6.54	241	1009	90	378	82TN270	7440-20-2		
		241	1007	90	376				
	See: 85DYK/GR/	<b>4.</b>							
Se <sup>+</sup>									
Se	9.752	279.2	1168.0	54.27	227.07	82TN270	7782-49-2		
		279.0	1167.3	54.11	226.40				
SeSn <sup>+</sup>									
SeSn + SeSn	(8.6)	(229)	(959)	31	129	79HUB/HER	1315-06-6		
		(228)	(953)	31 29	129 <i>123</i>	79HUB/HER	1315-06-6		
	(8.6)  IP is onset of pho	(228)	(953)			79HUB/HER	1315-06-6		
SeSn		(228)	(953)			79HUB/HER	1315-06-6		
SeSn	IP is onset of pho	(228) toelectron b	(953)			79HUB/HER 83GRA/WIE	1315-06-6		
SeSn SeTe+		(228) toelectron b 	(953) eand.	29	123				
SeSn SeTe + SeTe	IP is onset of pho (8.5±0.2)	(228) toelectron b 	(953) eand.	29	123				
SeTe +	IP is onset of pho (8.5±0.2)	(228) toelectron b 	(953) eand.	29	123				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry		
Neutral	eV		l kJ/mol		kJ/mol	reference	number
Se <sub>2</sub> +							
Se <sub>2</sub>	8.70±0.05	236	985	35	146	82TN270	12185-17-0
		236	987	35	148		
	See also: 83POT	/NOV, 83G	RA/WIE.				
Si <sup>+</sup>							
Si ·	8.15172±0.00003	295	1236	108±2	450±8	82TN270	7440-21-3
		295	1233	106±2	446±8		
Si <sub>2</sub> +							
Si <sub>2</sub>	(7.4)	(311.6)	(1303.9)	141.0±3	589.9±13	85JANAF	12597-35-2
-		(311.0)	(1301.1)	140.3±3	587.1±13		
Sm <sup>+</sup>			<del></del>	<del></del>			
Sm	5.6437±0.0006	180	751	49.4	206.7	82TN270	7440-19-9
		179	751	49.3	206.1		
Sn +		<del></del>					
Sn	7.344	241.5	1010.7	72.2	302.1	82TN270	7440-31-5
		241.5	1010.6	72.2	302.0		
Sr ·	5.695	170	713	39±0.5	164±2	85JANAF	7440-24-6
<b></b>	0.020	170	713	39±0.5	164±2	000000000000000000000000000000000000000	
ra <sup>+</sup> Ta	7.40	358	1496	187	782	85JANAF	7440-25-7
14	7.40	357	1495 1495	186.7	781.4	TANALCO	/440-23-7
	IP from 79RAU/	ACK.					
Гb +							· · · · · · · · · · · · · · · · · · ·
Tb	5.8639±0.0006	228	955	93	389	82TN270	7440-27-9
	0.000	228.6	956.4	93.4	390.6		
			<u></u>	<del></del>			
Гс <sup>+</sup> Tc	(7.28)	(330)	(1380)	162	678	82TN270	7440-26-8
			(1500)	102	075		
Ге <sup>+</sup>			,				
Те	9.009	255	1066	47	197	82TN270	22541-49-7
		255	1066	47	197		
reY +							
YTe	(6.0±1.0)	(206)	(860)	67	281	79HUB/HER	12187-04-1
	0 K values.						
Te <sub>2</sub> +							
Te <sub>2</sub>	8.29±0.03	223	933	32	133	79HUB/HER	10028-16-7
<b>L</b>		224	936	32	136		<del>-</del> -
	See also: 83GRA						

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	Δ <sub>f</sub> H(Ne	outral)	Neutral	CAS registry
Neutral	eV	kcal/mol			kJ/mol	reference	number
Th <sup>+</sup>							-
Th	6.08	283 <i>283</i>	1184 <i>1184</i>	143 <i>143</i>	597 597	85KLE/WAR	7440-29-1
Ti <sup>+</sup>				······································			·····
Ti	6.82	270 <i>269</i>	1128 <i>1125</i>	112 <i>112</i>	470 <i>467</i>	82TN270	7440-32-6
Tl+	<del></del>						
TI	6.108	184.4 184.5	771.6 <i>772.1</i>	43.5 43.7	182.2 <i>182.8</i>	82TN270	7440-28-0
Tl <sub>2</sub> +							
T1 <sub>2</sub>	(6.5±0.5) IP from 80BAL/P	<i>(223)</i> IA. 0 K valu	<i>(932)</i> es.	73	305	80BAL/PIA	76939-73-6
Tm <sup>+</sup>							
Tm	6.18	198 <i>198</i>	828 <i>830</i>	55 55.8	232 233.4	82TN270	7440-30-4
U <sup>+</sup>							
υ	6.1912	270 <i>270</i>	1128 <i>1128</i>	127 <i>127</i>	531 <i>531</i>	85KLE/WAR	7440-61-1
	IP from 70EME/K	(HO, 76SOL	/MAY. See	also: 81CHE/G	AB.		
$V^+$							
V	6.74	278 <i>278</i>	1165 <i>1162</i>	123±2 <i>122±2</i>	515±8 <i>512±8</i>	85JANAF	7440-62-2
	See also: 85DYK/		1102	12232	31220		
w+		······································					
w	7.60	379 <i>378</i>	1584 <i>1582</i>		851.0±6.3 849.8±6.3	85JANAF	7440-33-7
Xe <sup>+</sup>							
Xe	12.130	279.7 279.7	1170.4 <i>1170.4</i>	0 <i>0</i> -	0 <i>0</i>	*DEF	7440-63-3
	See also: 81KIM/K	KAT.					
Xe <sub>2</sub> +							
Xe <sub>2</sub>	11.13±0.02 See also: 82POL/E	<i>256</i> DEH. 0 K val	<i>1072</i> ues.	-0.53	-2.22	79HUB/HER	12185-19-2
Y	(6.22)		(1021) <i>(1021)</i>	101 <i>100.5</i>	421 <i>420.4</i>	82TN270	7440-65-5
	IP from 73GAR/R	EE.					
Yb <sup>+</sup>							
Yb	6.254	180 <i>180.7</i>	755 756.2	36 <i>36.5</i>	152 <i>152.8</i>	82TN270	7440-64-4

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{Io}$	$\Delta_{\mathbf{f}}H(Ion)$		$\Delta_{\mathbf{f}}H(\text{Neutral})$		CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
$Z_n$ +			<del></del>				****
Zn	9.394	247.8	1036.8	31.2	130.4±0.2	85JANAF	7440-66-6
		247.7	1036.3	31.0	129.9±0.2		
Zr <sup>+</sup>	and a second			······································			
Zr	6.84	303	1270	146±2	610±8	85JANAF	7440-67-7
		302	1262	144±2	602±8		

Table 2. Negative Ion Table

	H <sub>acid</sub> (AH) I <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
e <sup>-</sup>				$\Delta_f H(AH) = 218$	82TN270
e <sup>-</sup>				BDE(A-H)= 1312	82TN270
• 0	1312 <sup>f</sup>	1308 <sup>h</sup>	Def		82TN270
Ag <sup>-</sup>					
Ag <sup>-</sup>				$\Delta_f H(A) = 285$	82TN270
* 159±1 <sup>b</sup> 1.302±0.007			LPES		85HOT/LIN
Al-		,		$\Delta_f H(AH) = 259 \pm 1$	82TN270
AI <sup>+</sup>				$BDE(A-H) = 285 \pm 3$	81KANIMOO
* 284±5 <sup>8</sup> 0.441±0.010	1554±4 <sup>e</sup>		LPES		85HOT/LIN
AlBeF <sub>6</sub>					
$BeF_2 \cdot AIF_4$					
-2921±21 <sup>c</sup>	182±10		TDAs		80NIK/SOR
AlBeF <sub>7</sub> K <sup>-</sup>					
KBeF <sub>3</sub> ··AIF <sub>4</sub> <sup>-</sup>					
-3522±21 °	192±8		TDAs		80NIK/SOR
AlBeF <sub>7</sub> Na <sup>-</sup>					
NaBeF <sub>3</sub> ··AlF <sub>4</sub> <sup>™</sup>					
-3497±21 <sup>c</sup>	192±8		TDAs		80NIK/SOR
AIF2					
AIF2				$\Delta_f H(A) = -749 \pm 13$	81W00
-971±13 2.25±0.13			TDEq	EA: 111 kJ < EA(F), new EA(F) data used	74SRI/UY
AIF <sub>4</sub> - AIF <sub>3</sub> ··F-					
* -1945±10 <sup>c</sup>	488±8		TDAs		86NIK/IGO
		Summary of lite		a plus new work. Recommended average value	
-1972±21 <sup>c</sup>	498±7	·		F <sup>-</sup> A: 1100K; Δ <sub>f</sub> H(AlF <sub>4</sub> <sup>-</sup> ): 298K	80SID/NIK
-1964±14 <sup>c</sup>	495±11			F'A: 93±1 kJ > UF <sub>4</sub>	79NIK/SKO
-1954±12 <sup>c</sup>	500±8			F-A:17 kJ > ScF <sub>3</sub>	81NIK/SID
-2092±13	628±42 <sup>k</sup>			$2AIF_2 + AIF_2 = 2AIF + AIF_4$	74SRI/UY
-1949±16 <sup>c</sup>	496±13		TDEq	$KF_2^- + KAIF_4 = AIF_4^- + 2KF$	80GUS/PYA
AIF <sub>5</sub> K <sup>-</sup>					
KF··AIF4					
-2397±33 <sup>c</sup>	120±8		TDAs		79GUS/GOR
AlF <sub>7</sub> Mn <sup>-</sup>			,		
•					
$MnF_3 \cdot \cdot AlF_4$					
MnF <sub>3</sub> ··AlF <sub>4</sub> <sup>-</sup> -2950±60			TDAs		84KOR/CHI
-2950±60			TDAs		84KOR/CHI
- ·			TDAs	$\Delta_f H(A) = 67 \pm 8$	84KOR/CHI 85JANAF

Table 2. Negative Ion Table - Continued

$\begin{array}{cc} \text{Ion} & \Delta_f H(A^-) \\ & \Delta_f H(X \cdot \cdot Y^-) \end{array}$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	ΔG <sub>acid</sub> (AH) ΔG <sub>aff</sub> (X··Υ)	Method	Comment	Reference
NO <sub>2</sub> -						
AIO <sub>2</sub>					$\Delta_f H(A) = -130$	82KAS/CHE
−583±13 <sup>b</sup>	4.05±0.13	}		TDEq		72SRI/UY
			EA: 42 kJ > EA	(CI), new	$r$ data for $\Delta_f H(AlO_2)$ and EA(CI) used	
1 <sub>2</sub> F <sub>7</sub> -						
AIF3 ·· AIF4						00077 0777
-3394±15 <sup>C</sup>		204±4	175±8	TDAs		80SID/NIK
-3393±33				TDAs		79GUS/GOR
J <sub>2</sub> F <sub>8</sub> K	_					
KAIF4 · AIF4	=	- 17	400 40			COCKE OFFI
-4011±42 <sup>c</sup>		147±6	123±10	TDAs		80SID/NIK
l <sub>2</sub> F <sub>8</sub> Na <sup>-</sup>	_				•	
NaAIF <sub>4</sub> · · AIF <sub>4</sub>	<b>‡</b>	477.0	141.40	(TT) A =		00010 4111
-4006±42 °		166±9	141±13	TDAs		80SID/NIK
rBr-						
Ar··Br		_				
-219 <sup>c</sup>		6		Mobl		84GAT
s"						
As <sup>-</sup>					$\Delta_f H(A) = 303 \pm 2$	82TN270
* 224±5 b	0.81±0.03			PD		85HOT/LIN
sBr <sup>-</sup>						
AsBr <sup></sup>						
7	1.3			EIAP	From AsBr <sub>3</sub>	76PAB/BEN
sBr <sub>2</sub> -			, , , , , , , , , , , , , , , , , , ,			
AsBr <sub>2</sub>						
	3.5±0.1			EIAP	From AsBr <sub>3</sub>	78PAB/MAR
-303 	3.5			EIAP	From AsBr <sub>3</sub>	76PAB/BEN
sCl <sup>-</sup>					-	
AsCl <sup>-</sup> ·						
<del>-</del> 9	1.3			EIAP	From AsCl <sub>3</sub>	76PAB/BEN
sClF3 <sup>-</sup>						
AsF <sub>3</sub> ··Cl <sup>™</sup>						
* -1121±12 °		108±8 g	78±8	IMRE		85LAR/MCM
sCl <sub>2</sub> -			——————————————————————————————————————			
AsCl <sub>2</sub>					$\Delta_f H(A) = 67 \pm 21$	82TN270
-273	2.2			EIAP	From AsCl <sub>3</sub>	76PAB/BEN
	2.2±0.1			EIAP	From AsCl <sub>3</sub>	78PAB/MAR
sF						
AsF <sup>-</sup> ·						
	1.3			EIAP	From AsF <sub>3</sub>	76PAB/BEN

Table 2. Negative Ion Table - Continued

Ion $\Delta_{f}H(A^{-})$ $\Delta_{f}H(X \cdot \cdot Y^{-})$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
AsF <sub>2</sub> -						
AsF <sub>2</sub>						
-543	8.0			EIAP	•	76PAB/BEN
	0.8±0.1			EIAP	From AsF <sub>3</sub>	78PAB/MAR
AsF <sub>4</sub> -						
$AsF_3 \cdot \cdot F$						
* -1236±13 <sup>C</sup>		202±8 <sup>g</sup>	172±8	IMRE		85LAR/MCM
∆sH−						
AsH <sup></sup> ·						
	1.0±0.1			PD		77RAC/FEL
< 167					$As^- + AsH_3 \rightarrow$	74WYA/HOL
	<1.1			IMRB	From AsH <sub>3</sub>	64EBI/KRA
sH <sub>2</sub> -					$\Delta_f H(AH) = 67 \pm 1$	82TN270
AsH <sub>2</sub>				D-EA	$BDE(A-H) = 326\pm33$	
* 52±26 <sup>a</sup>		1515±26 <sup>g</sup>	1483±25	IMRB	Between PH <sub>3</sub> , H <sub>2</sub> S	74WYA/HOL
•	1.27±0.03			PD		72SMY/BRA2
<41±20 <sup>a</sup>	< 1.1±0.5	d <1505±19		EIAP	From AsH <sub>3</sub>	64EBI/KRA
s <sub>2</sub> -						
As <sub>2</sub>					$\Delta_f H(A) = 190 \pm 3$	73BEN MAR
_	< 0.8			PD	·	77FEL/RAC
180±19	0.1±0.2 <sup>i</sup>			EIAP	From As <sub>4</sub>	73BEN/MAR
s <sub>2</sub> H <sup>-</sup>						
As <sub>2</sub> H						
< 288				IMRB	$As^- + AsH_3 \rightarrow As_2H^- + H_2$	74WYA/HOL
.s3 <sup>-</sup>						
As <sub>3</sub>					$\Delta_f H(A) = 241 \pm 16$	73BEN MAR
160±18	0.8±0.4 <sup>i</sup>			EIAP	From As <sub>4</sub>	73BEN/MAR
u <sup>-</sup>					$\Delta_f H(AH) = 295 \pm 2$	82TN270
Au <sup>-</sup>					$BDE(A-H) = 289 \pm 4$	82TN270
* 144±6 <sup>a</sup>	2.309	1379±4 <sup>e</sup>		LPD		85HOT/LIN
uF <sub>6</sub> -			······································			<u></u>
AuF <sub>6</sub> -						
0	> 1.0			NBIP		80COM/REI
<del>-</del>					$\Delta_f H(AH) = 450\pm 2$	82TN270
					$BDE(A-H) = 211\pm10$	85JANAF
<b>P</b>	0.000.00	10 1497±11 <sup>e</sup>	1468±13 <sup>h</sup>	LPES	DDE(N-1) - ZIIII	85HOT/LIN
B <sup>-</sup> * 416±13 <sup>a</sup>	0.277±0.0	11>7211				
* 416±13 <sup>a</sup>	0.277±0.0					
	0.277±0.0.	117/222			$\Delta_f H(A) = -337 \pm 42$	85JANAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
BBr <sub>2</sub> Cl <sup>-</sup> BBr <sub>2</sub> Cl <sup>-</sup> · -363±61 <sup>b</sup>	0.9±0.2			NBIP	$\Delta_{f}H(A)=-272\pm42$	<i>85JANAF</i> 80ROT/MAT
BBr <sub>3</sub> <sup>-</sup> : -285±20 b	0.8±0.2			NBIP	$\Delta_f H(A) = -206$	<i>82TN270</i> 80ROT/MAT
BCIF <sub>3</sub> - BF <sub>3</sub> ···CI- • -1473±12 °		109±8 g	81±8	IMRE		85LAR/MCM
3Cl <sub>2</sub> -			***************************************		$\Delta_f H(AH) = -248 \pm 4$	71JANAF
BCl <sub>2</sub> <sup>-</sup> -144±109 <sup>t</sup>	0.6			Est2	Est: from IP, EA of isoelectronic NO <sub>2</sub> , BF <sub>2</sub> , AIF <sub>2</sub>	82JANAF
BCl <sub>3</sub> <sup>-</sup> . BCl <sub>3</sub> <sup>-</sup> . -436±20 b	0.3±0.2			NBIP	$\Delta_f H(A) = -404 \pm 1$	<i>82TN270</i> 80ROT/MAT
BCl <sub>3</sub> F <sup>-</sup> BCl <sub>3</sub> ··F <sup>-</sup> <-890		> 238 <sup>k</sup>		IMRB	F <sup>-</sup> A: > SF <sub>5</sub>	72STO/NEL
BCl <sub>4</sub> <sup>-</sup> BCl <sub>3</sub> ··Cl <sup>-</sup> -920±6		289±8 <sup>k</sup>		Latt		77KRI/ITT
BF2 <sup>-</sup> BF2 <sup>-</sup> -796±26 b	2.13±0.13	1468±29 <b>c</b>	1436±31 <sup>h</sup>	IMRE	$\Delta_f H(AH) = -734\pm3$ $BDE(A-H) = 362\pm17$ EA: 122 kJ < EA(F), new EA(F) used	85JANAF 85JANAF 74SRI/UY
BF <sub>2</sub> O <sup>-</sup> BF <sub>2</sub> O <sup>-</sup> <-1002±25		< 1619±33 <sup>f</sup>		IMRB	$\Delta_f H(AH) = -1092\pm 8$ $BDE(A-H) = 473\pm 23$ $DO^- + BF_3 \rightarrow$	82TN270 85JANAF 72STO/NEL
BF <sub>3</sub> -	0.0±0.2 2.6			NBIP SI	$\Delta_f H(A) = -1137 \pm 2$ See also: 72STO/NEL	85JANAF 80ROT/MAT 69PAG/GOO
BF <sub>4</sub> - BF <sub>3</sub> ··F- • -1687±25 c -1716±44 c -1773±26 -1779±21 <-1812 <-1368		301±21 <sup>g</sup> 330±40 385±25 <sup>k</sup> 393±21 <sup>k</sup>	266±8		BF <sub>3</sub> + BF <sub>2</sub> <sup>-</sup> = BF <sub>4</sub> <sup>-</sup> + BF F <sup>-</sup> A: > SF <sub>5</sub>	85LAR/MCM 84PYA/GUS 84MAL/ROS 77KRI/ITT 74SRI/UY 72STO/NEL

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
ВН4-						
BH <sub>3</sub> ··H⁻						
< 197±28		<b>. b</b>			$HO^- + B_2H_6 \rightarrow$	68DUN
-96±21		341 k		Latt		55ALT
-85±8		322±8 k		Latt		77KRI/TTT
BKO <sub>2</sub> -						
кво2					$\Delta_f H(A) = -672 \pm 10$	85FARISRI
−785±31 b	1.2±0.2			EIAP	From K <sub>2</sub> BO <sub>2</sub> F	76SHE/ILJ
BNaO <sub>2</sub> -						
NaBO <sub>2</sub>					$\Delta_f H(A) = -644 \pm 42$	82TN270
-782±63 b	1.4±0.2			EIAP	From Na <sub>2</sub> BO <sub>2</sub> F	76SHE/ILJ
BO- BO-						
−196±17 b	2.84±0.09	•		TDEq		71SRI/UY
			EA(BO) < EA	_	kJ, new $\Delta_f H(BO.)$ and EA(Cl) used	
	> 2.48			TDEq		70JEN
BO <sub>2</sub> -	<u></u>				$\Delta_f H(AH) = -562 \pm 4$	82TN270
BO <sub>2</sub>					BDE(A-H)= 479±6	82TN270
	4.51±0.21	i 1356±26 <sup>e</sup>		TDEq	•	83SID/RUD
-617±15 b				TDEq		71SRI/UY
			$EA(BO_2) < EA$	-	kJ, new $\Delta_f H(BO_2)$ and EA(CI) used	
	3.4±0.5		` 2'		From K <sub>2</sub> BO <sub>2</sub> F	76SHE/ILJ
	4.19±0.31			TDEq	2 2	70JEN
BeF <sub>3</sub> -				· · · · · · · · · · · · · · · · · · ·		· <u></u>
-1477±15 <sup>c</sup>		407±10		TDEq	$F^-A: 83\pm7 \text{ kJ} < A1F_3$	80NIK/SOR
BeH <sup>-</sup>						
BeH-					$\Delta_f H(A) = 344$	79HUB HER
276 <sup>b</sup>	0.7±0.1			PD	•	77RAC/FEL
Be <sub>2</sub> F <sub>5</sub>						
$\text{Be}_2\text{F}_4\cdot\cdot\text{F}$						
		464±8		TDEq	$F^A: 26\pm 8 \text{ kJ} < AIF_3$	80NIK/SOR
Be <sub>2</sub> F <sub>6</sub> K						
KF. Be <sub>2</sub> F <sub>5</sub>						
-617 c		290±10		TDAs		80NIK/SOR
Be <sub>2</sub> F <sub>6</sub> Na <sup>-</sup>						· · · · · · · · · · · · · · · · · · ·
NaF··Be <sub>2</sub> F <sub>5</sub>						
-564 c		273±10		TDAs		80NIK/SOR
Be <sub>3</sub> F <sub>7</sub>						
BeF <sub>2</sub> ··Be <sub>2</sub> F <sub>5</sub> -969 c	•					
		175±10		<b>TDAs</b>		80NIK/SOR

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Be <sub>3</sub> F <sub>8</sub> K <sup>-</sup> KBeF <sub>3</sub> ··Be <sub>2</sub> l -1482±21		188±8		TDAs		OUNTRY (COD
-140Z±Z1		10010		IDAS		80NIK/SOR
Bi <sup>-</sup> . Bi <sup>-</sup> 116±5 <sup>b</sup>	0.946±0.0	010		LPES	$\Delta_{f} H(A) = 207 \pm 4$	<i>82TN270</i> 85HOT/LIN
Br-		***			Δ <sub>f</sub> H(AH) = −36	85JANAF
Br <sup>-</sup>					BDE(A-H) = 366	82BAU/COX
• -213±1 <sup>a</sup>	3.365±0.0	1354 <sup>e</sup> 1349±9 <sup>g</sup>	1331±1 <sup>h</sup> 1326±8	PLA IMRE		85HOT/LIN 86TAF
BrClH-				<del> </del>		<del>,</del>
HCl··Br¯						
* -387±9 °		82±8	54±11	TDAs		85CAL/KEB
BrCl <sub>2</sub> - BrCl <sub>2</sub> -						
<-464		> 251 <sup>k</sup>		PDis		79LEE/SMI
BrCl <sub>2</sub> P		···				
PBrCl2-				Est2	$\Delta_f H(A) = -188 \pm 42$	
-335±61 b	1.5±0.2			NBIP		76MAT/ROT
BrFH <sup>-</sup>						
HF··Br <sup>™</sup>						
* -557±10 <sup>c</sup>		71±8		Est	Extrapolated from other bihalide data	84LAR/MCM3
BrHI <sup>-</sup>						
HBr··I <sup>™</sup>						
* -292±9 °		67±8	43±11	TDAs		85CAL/KEB
BrHNO <sub>3</sub> -						
HBr··NO <sub>3</sub>						
-438±10 <sup>c</sup>		94±8	78±7	TDEq		77DAV/FEH
BrH <sub>2</sub> O <sup>-</sup>						
HOH··Br¯						
-517 <sup>c</sup>		62	37	TDAs		82BUR/HAY
		53±8	29±8	TDAs		70ARS/YAM
BrI <sup>-</sup>						
IBr					$\Delta_f H(A) = 41 \pm 1$	82TN270
−205±11 <sup>b</sup>				NBIP		72BAE
	2.5±0.1			NBIP		73AUE/HUB
	2.7±0.2			EnCT		71CHU/BER
	1.62±0.05			NBIP	Vertical EA	76HUB/KLE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
BrK <sup>-</sup> KBr <sup>-</sup> ·	0.6			Scat	$\Delta_f H(A) = -180 \pm 2$	85JANAF 79DEV/WIJ
BrKr <sup>-</sup>						
Kr··Br <sup>-</sup> -221 <sup>c</sup>		8		Mobi		84GAT
BrNa <sup>-</sup> NaBr <sup>-</sup> · -234 <sup>b</sup>	0.9			Scat	$\Delta_f H(A) = -143 \pm 8$	<i>82TN270</i> 79DEV/WIJ
BrO <sup>-</sup> BrO <sup>-</sup> <-20±21	> 1.5±0.2	i <1590±29 f		Endo	$\Delta_f H(AH) = -79\pm 8$ $BDE(A-H) = 423\pm 13$ $Br^- + O_2 \rightarrow$	76BEN 82TN270 77VOG/DRE
BrO <sub>2</sub> S <sup>-</sup> SO <sub>2</sub> ··Br <sup>-</sup> -590±10 c		81±8	53±11	TDAs		85CAL/KEB
BrPb- PbBr-	0.9±0.2			EIAP	From PbBr <sub>2</sub>	67HAS/BLO
BrXe <sup>-</sup> Xe··Br <sup>-</sup> -227 c		14		Mobi		84GAT
Br <sub>2</sub> -B <sub>r2</sub>	2.5±0.1 2.4 2.5±0.1 2.6±0.2 2.6±0.2 2.9±0.1 1.47±0.05			NBIP ECD EnCT NBIP EnCT EIAP NBIP	$\Delta_f H(A) = 31$ Vertical EA: 1.6 eV  From CBr <sub>4</sub> Vertical EA	82BAU/COX 72BAE 81AYA/WEN 71CHU/BER 77DIS/LAC2 73HUG/LIF 71DEC/FRA 76HUB/KLE
Br <sub>2</sub> ClP <sup>-</sup> PBr <sub>2</sub> Cl <sup>-</sup> · -309±61 b	1.6±0.2			Est2 NBIP	$\Delta_f H(A) = -152 \pm 42$	76MAT/ROT
Br <sub>2</sub> Ge <sup>-</sup> GeBr <sub>2</sub> <sup>-</sup> · <-217 b	> 1.6			EIAP	$\Delta_f H(A) = -63\pm 8$ From GeBr <sub>4</sub>	<i>82TN270</i> 77PAB/MAR
Br <sub>2</sub> H <sup>-</sup> HBr··Br <sup>-</sup> • -336±9 °		86±8	58±11	TDAs		85CAL/KEB

Table 2. Negative Ion Table - Continued

$ \begin{array}{cc} \text{Ion} & \Delta_{\mathbf{f}}H(\mathbf{A}^{-}) \\ & \Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-}) \end{array} $	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment Comment	Reference
Br <sub>2</sub> I-						
IBr <sub>2</sub> <sup>-</sup> -251		95 k		T are		77EINIC AT
-21		95		Latt		77FIN/GAT
Br <sub>2</sub> Si <sup>-</sup>						
SiBr <sub>2</sub>	- 17			TTAD	R CP.	977 4 D 0 4 4 D
	>1.7			EIAP	From SiBr <sub>4</sub>	77PAB/MAR
3r <sub>2</sub> Sn <sup>-</sup>						
SnBr <sub>2</sub>	1.2			TTAD	F 0.D	Marin A PO MORTO
-54	1.3			EIAP	From SnBr <sub>4</sub>	77PAB/PER
3r3Ge-						
GeBr <sub>3</sub>	•					
	>0.9			EIAP	From GeBr <sub>4</sub>	77PAB/MAR
Br <sub>3</sub> P-						
PBr <sub>3</sub>					$\Delta_f H(A) = -139 \pm 8$	82TN270
-293±23 b	1.6±0.2			NBIP		76MAT/ROT
Br <sub>3</sub> Si <sup>-</sup>	***				$\Delta_f H(AH) = -318 \pm 2$	82TN270
SiBr <sub>3</sub>						5277.275
	>1.5±0.2			EIAP	From SiBr <sub>4</sub>	77PAB/MAR
Br <sub>3</sub> Sn <sup>-</sup>					$\Delta_f H(AH) = -318 \pm 8$	82TN270
SnBr <sub>3</sub>					$BDE(A-H) = 349\pm28$	77PAB PER
•	3.08±0.01			EIAP	From SnBr <sub>4</sub>	78PAB/MAR
<-484	> 3.1			EIAP	From SnBr <sub>4</sub>	77PAB/PER
Br3Ti <sup>-</sup>						
TiBr <sub>3</sub>					$\Delta_f H(A) = -377 \pm 42$	74BENI PAB
	0.76±0.01			EIAP	From TiBr <sub>4</sub>	78PAB/MAR
-452±15	0.8±0.3			EIAP	From TiBr <sub>4</sub>	74BEN/PAB
;					$\Delta_f H(AH) = 596$	82TN270
C <sup>-</sup>					$BDE(A-H) = 339 \pm 1$	82TN270
* 595±1 <sup>a</sup>	1.263	1529±1 e	1506±2 h	LPD		85HOT/LIN
	>1.2±1.0			EIAP	From graphite	54HON
BrF <sub>3</sub> -						
CF <sub>3</sub> Br <sup></sup>					$\Delta_f H(A) = -652$	78KUD KUD
-740 b	0.9±0.2			NBIP	•	78COM/REI2
·Br <sub>3</sub> -					$\Delta_f H(AH) = 24 \pm 5$	84BIC/MIN
Br <sub>3</sub> C					$BDE(A-H) = 402\pm7$	82MCM/GOL
40±29 b	1.7±0.2	1546±34 f	1514±38 <sup>h</sup>	SI	• • • • • • • • • • • • • • • • • • • •	69PAG/GOO
Br <sub>4</sub> -						
Br <sub>4</sub> C <sup>-,</sup>					$\Delta_f H(A) = 84 \pm 3$	84BICI MIN
· t_	2.1			SI	• • •	69PAG/GOO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
CCIF <sub>2</sub> <sup>-</sup> CF <sub>2</sub> Cl <sup>-</sup> -431±35 <sup>a</sup>	1.6±0.3 >1.9	1583±33 <sup>e</sup>	1550±37 <sup>h</sup>	NBAP EIAP	$\Delta_f H(AH) = -484\pm 2$ $BDE(A-H) = 425\pm 4$ From $CF_2Cl_2$ From $CF_3Cl$	77PED/RYL 82MCM/GOL 78DIS/LAC 79ILL/SCH
CCIF <sub>2</sub> O <sup>-</sup> CF <sub>2</sub> =O··Cl <sup>-</sup> -920±11 c  <-728±25		52±8 <sup>g</sup>	28±8	IMRE IMRB	CICO¯ or CIF¯ + CF <sub>2</sub> O →	85LAR/MCM 76KAR/KLE
CCIO <sup>-</sup> CICO <sup>-</sup> <-356		> 21 <sup>k</sup>		EIAP	From Cl <sub>2</sub> CO	76KAR/KLE
CClO <sub>2</sub> <sup>-</sup> CO <sub>2</sub> ··Cl <sup>-</sup> * -654±2 °		33 32±8	9 9±8	TDAs TDEq		80KEE/LEE 86HIR/SHO
CCIS <sub>2</sub> - CS <sub>2</sub> ··Cl- * -159±10 °		49±88	24±8	IMRE		85LAR/MCM
CCl <sub>2</sub> <sup>-</sup> . CCl <sub>2</sub> <sup>-</sup> 10±42 <sup>b</sup>	1.8±0.3 2.5±0.6	1411±46 <sup>c</sup>		NBAP EIAP	$\Delta_f H(AH) = 109\pm 4$ $BDE(A-H) = 272\pm 17$ From $CCl_4$ , $CFCl_3$ , $CHCl_3$ From $CCl_4$ , $CHCl_3$ , $CH_2Cl_2$	83WEI BEN 85LIA KAR 78DIS/LAC 80SCH/ILL
CCl <sub>2</sub> F- CCl <sub>2</sub> F	> 2.4±0.2 1.1±0.3	<1506±23 <sup>e</sup>		EIAP NBAP	$\Delta_f H(AH) = -281$ $BDE(A-H) = 425\pm4$ From $CF_2CI_2$ From $CFCI_3$	78KUD KUD 82MCM GOL 79ILL/SCH 78DIS/LAC
CCl <sub>2</sub> FO <sup>-</sup> CCl <sub>2</sub> =O··F <sup>-</sup> <-590±50				IMRB	FCO¯ + CCl <sub>2</sub> Ò →	76KAR/KLE
CCl <sub>2</sub> F <sub>2</sub> <sup>-</sup> CCl <sub>2</sub> F <sub>2</sub> <sup>-</sup> -516±25 b	0.4±0.2			NBIP	$\Delta_f H(A) = -477 \pm 5$	77PED/RYL 78DIS/LAC
CCl <sub>3</sub> <sup>-</sup> CCl <sub>3</sub> <sup>-</sup> • -141±28 <sup>a</sup>	2.3±0.3 d 2.6±0.2 > 1.9 1.3±0.3 > 2.1±0.3 1.44±0.05	1494±26 g	1461±25	IMRB EIAP EIAP NBAP EIAP	$\Delta_f H(AH) = -105\pm 2$ $BDE(A-H) = 401\pm 4$ > acetone, $\leq C_5H_6$ From $CCl_4$ From $CFCl_3$ From $CHCl_3$ , $CCl_4$ From $CFCl_3$	77PED/RYL 82MCM/GOL 72BOH/LEE 80SCH/ILL 79ILL/SCH 78DIS/LAC 61CUR 66GAI/KAY

Table 2. Negative Ion Table - Continued

		Labic	2. Negative io	I Lable	Continued	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CCl <sub>3</sub> F <sup>-</sup>						
CCI3FT.					$\Delta_f H(A) = -268 \pm 8$	77PED/RYL
−374±37 <sup>b</sup>	1.1±0.3			NBIP		78DIS/LAC
CCl <sub>3</sub> O						
CCl <sub>2</sub> =O··Cl	-					
* -498±9 c		52±8 g	27±8	IMRE		85LAR/MCM
-460±8				IMRB		76KAR/KLE
CCI <sub>4</sub>						
CCI <sub>4</sub>					$\Delta_f H(A) = -97 \pm 3$	77PED/RYL
-290±22 b	2 0+0 2			NBIP	2411(2) = -37±3	83LAC/MAN
-270±22	2.0±0.2 2.0±0.2			NBIP		78DIS/LAC
	2.0±0.2 2.1±0.1			SI		66GAI/KAY
	2.1±0.1		· · · · · · · · · · · · · · · · · · ·			
CCl <sub>5</sub>					•	
CC1 <sub>4</sub> ··C1 <sup>-</sup>		<i>co.</i> <b>c</b>	25.4	FFT 4		TAD OLLID AL
-384±7 <sup>c</sup>		59±3	25±4	TDAs		74DOU/DAL
CF-						
CF-					$\Delta_f H(A) = 255$	85JANAF
	> 3.3±0.3			EIAP	From C <sub>2</sub> F <sub>4</sub>	70THY/MAC2
CFN-						
FCNT.					$\Delta_f H(A) = 36 \pm 17$	85JANAF
-318	2.9 <sup>i</sup>			EIAP		86HEN/ILL
	>4.0			EIAP	From PF <sub>2</sub> CN	74HAR/RAN
CFO-				Est	$\Delta_f H(AH) = -380$	,
FCO <sup>-</sup>					BDE(A-H)= 415±29	81DYKJON2
-444±10	2.7 i	104 <sup>k</sup>		EIAP	From CF <sub>2</sub> O	70THY/MAC
-435 <sup>a</sup>	2.3±0.5 d	1475±19		EIAP	From HCOF	77KAR/KLE
	3.3	1410222		EIAP	From (CF <sub>3</sub> ) <sub>2</sub> CO	70HAR/THY
OE00-				<u></u>		
CFOS- COS··F						
* -524±11 °		133±8 <sup>g</sup>	103±8	IMRE		85LAR/MCM
CFO <sub>2</sub> -						
CO <sub>2</sub> ··F <sup>-</sup> • -775±11 °		122.09	102.0	IMDE		051 AD 0.40M
-780±11 °		133±8 g	103±8	IMRE IMRE		85LAR/MCM
-/00±13		138±13		IMICE		78MCM/NOR
CFS <sub>2</sub> - CS <sub>2</sub> ··F						
• -262±11 °		131±8 g	101±8	IMRE		85LAR/MCM
CF-	·····					
CF <sub>2</sub> <sup>-</sup> .					$\Delta_f H(A) = -205 \pm 13$	85LIA/KAR
<-102				IMRB	O <sup>-</sup> + CH <sub>2</sub> F <sub>2</sub> →	76DAW/JEN
· •••	<1.3±0.8			EIAP	From c-C <sub>4</sub> F <sub>8</sub>	72HAR/THY2
	> 0.2				From C <sub>2</sub> F <sub>4</sub>	70THY/MAC2
	<del>-</del>				· -2-4	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CF <sub>2</sub> -					4 444)	
CF <sub>2</sub> <sup>-</sup> ·	2.6			SI	$\Delta_f H(A) = -205 \pm 13$	85LIA/KAR 69PAG/GOO
CF <sub>2</sub> N <sup>-</sup>						
<-222				EIAP	From CF <sub>3</sub> NC	86HEN/ILL
CF <sub>3</sub>					$\Delta_f H(AH) = -695 \pm 1$	78KUD KUD
CF <sub>3</sub>		_			BDE(A-H)= 443±7	86TSA
* -648±10 a	1.84±0.16	d 1577±9 g	1545±8	IMRE		79BAR/SCO
*	2.82±0.01			PD	Vertical detachment energy	75RIC/STE4
	1.9±0.3			NBAP	From CF <sub>4</sub>	78DIS/LAC
	> 2.0±0.2			EIAP	From C <sub>3</sub> F <sub>8</sub>	74HAR/FRA
	> 2.4±0.5			EIAP	From C <sub>2</sub> F <sub>6</sub>	74HAR/FRA
	2.2±0.3			EIAP	From CF <sub>4</sub>	74HAR/FRA
-683	2.2			EIAP	From CF <sub>4</sub>	74FRA/WAN
-651	1.9			EIAP	From CF <sub>4</sub>	73WAN/MAR
-001					•	
	3.1±0.2			EIAP	From CF <sub>4</sub>	72LIF/GRA
	2.1±0.3			EIAP	From C <sub>2</sub> F <sub>4</sub>	70THY/MAC2
	1.8±0.2			EIAP	From CF <sub>3</sub> OF	70THY/MAC
	2.7±0.2			EIAP	From CF <sub>4</sub>	70MAC/THY
	2.5			EIAP	From (CF <sub>3</sub> ) <sub>2</sub> CO	70HAR/THY
	< 2.6			EIAP	From C <sub>2</sub> F <sub>6</sub>	69MAC/THY
	2.0			EIAP	From C <sub>3</sub> F <sub>8</sub>	69LIF/GRA
	3.3			EIAP	From C <sub>2</sub> F <sub>6</sub>	63BIB/CAR
	2.0±0.2			SI		69PAG/GOO
			1539±8	IMRE		79BAR/SCO
CF <sub>3</sub> I <sup>-</sup>						
CF <sub>3</sub> I <sup>-</sup> ·					$\Delta_f H(A) = -590 \pm 21$	78KUDIKUD
<b>3</b> ·	1.6±0.2			NBIP		78COM/REI2
	1.4±0.2			NBIP		76TAN/MAT
	2.2±0.2			NBIP		73MCN/LAC
						7311011/1110
CF <sub>3</sub> N <sup>-</sup>					•	
CF <sub>3</sub> N <sup></sup> <145±39				EIAP	From CF <sub>3</sub> NC	86HEN/ILL
CF <sub>3</sub> NO <sup>-</sup>	······································					
_				Ecia	A . U/A)	
CF <sub>3</sub> NO <sup>-</sup> .	E 4 0 - 0 4			Est2	$\Delta_f H(A) = -527$	aari v
<-720 b	>2.0±0.2	<u> </u>		EIAP	From(CF <sub>3</sub> ) <sub>2</sub> NO	77HAR
CF <sub>3</sub> O					$\Delta_f H(AH) = -876 \pm 21$	79KLO/SEP
$CF_2 = O \cdot \cdot F$					BDE(A-H)= 452±13	68CZA/CAS
* -1062±13 °	4 35±0 40	i <i>178±8                                   </i>	142±8	IMRE		83LAR/MCM
	4.JJIU.40		17230			
-1030±17 <sup>c</sup>		146±13		IMRE		78MCM/NOR
-937±25				IMRB	T . CT 00CT	76KAR/KLE
	>1.9±0.2			EIAP	From CF <sub>3</sub> OOCF <sub>3</sub>	72MAC/THY
	1.9±0.1			EIAP	From CF <sub>3</sub> OF	70THY/MAC
	1.3			SI		69PAG/GOO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CF <sub>3</sub> O <sub>3</sub> S <sup>-</sup>						
3 3	4.9±0.3			IMRB		86VIG
			Δ <sub>acid</sub> G: CF <sub>3</sub> SC	3H < FS	$O_3H < H_2SO_4 < HPO_3 < HI, \Delta_{acid}G(CF)$	
		<1312±8			From CF <sub>3</sub> SO <sub>3</sub> H,anhydride	86ADA/SMI
CF <sub>3</sub> S <sup>-</sup>	,					
CF <sub>3</sub> S						
	1.8			SI		69PAG/GOO
CFeO <sup>-</sup>						
Fc(CO)						
•	1.260±0.02	22		LPES	_	79ENG/LIN2
68±25				EIAP	From Fe(CO) <sub>5</sub>	76COM/STO
CI-						
CI					$\Delta_f H(A) = 552$	76REFIFRA2
<363 <sup>b</sup>	> 2.0			Endo	I <sup>-</sup> + CO →	77VOG/MIS
222±21	3.4±0.2 i			Endo	Γ + CO →	76REF/FRA2
CIO-						
ICO~						
-412	3.1			Endo	I" + COS→	76REF
CIO <sub>2</sub> -						
CO <sub>2</sub> ···I <sup></sup>						
* -605±1 °		23	2	TDAs		80KEE/LEE
CN-					$\Delta_f H(AH) = 135$	82TN270
CNT					$BDE(A-H) = 518\pm8$	82MCM/GOL
• 74±9 a	3.74±0.17	d <sub>1469±8</sub> g	1438±8	IMRE		79BAR/SCO
•	3.82±0.02	1461±10 <sup>c</sup>		PI		69BER/CHU
74					$I^- + (CN)_2 \rightarrow$	77REF/FRA
-105±19	3.2±0.1 <sup>1</sup>				From CH <sub>3</sub> CN	71DEC/BAF
	3.2			SI		74CHA/PAG
	2.8			SI		72PAG
	2.80±0.02			SI	New DH(H-CN) used	63NAP/PAG
			1447±8	IMRE <sup>0</sup>		79BAR/SCO
CNO-						
CNO-						
142				EIAP	From MeNO <sub>2</sub>	72DID/FRA
190±13				EIAP	From MeNO <sub>2</sub>	69TSU/YOK2
CNO-					$\Delta_f H(AH) = -105 \pm 12$	86SP∦PER
NCO-					BDE(A-H)= 477±26	70OKA
• -192±21 a	3.59±0.36	d 1443±9 g	1415±8	IMRE	•	80WIG/BEA
	> 2.6±0.4		• •	EIAP	From PF <sub>2</sub> NCO	72THY

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CNO <sub>4</sub>						
$CO_2 \cdot NO_3$						
* -740±2 c		<i>39</i>	8±1	TDAs		80KEE/LEE
CNS-					$\Delta_f H(AH) = 128 \pm 2$	82TN270
SCNT					BDE(A-H)= 464±6	63NAPIPAG
		1375±25 g	1343±21	IMRB	Acid: HNCS	84BIE/GRA
	2.0			SI		72PAG
	2.15±0.02			SI	From (SCN) <sub>2</sub>	63NAP/PAG
CNSe <sup>-</sup>						
SeCNT						
	2.6			SI		69PAG/GOO
CN2						
CN <sub>2</sub>						
< 649	-			IMRB	$O^- + CH_2N_2 \text{ or } (CN)_2 \rightarrow$	79DAW/NOE
CN <sub>3</sub> O <sub>6</sub> -					$\Delta_f H(AH) = -2\pm 2$	77PED/RYL
(NO <sub>2</sub> ) <sub>3</sub> C	3.1			EIAP	From C(NO <sub>2</sub> ) <sub>4</sub>	67JAE/HEN
CO-						
co-					$\Delta_f H(A) = -110$	82TN270
-243	1.4			EnCT	27	76REF/FRA2
COS-						
cos-					$\Delta_f H(A) = -142 \pm 1$	77PED/RYL
-187±20 b	0.5±0.2			NBIP		75COM/REI
	>0.4			ECD		83CHE/WEN
CO <sub>2</sub> -						
co <sub>2</sub>					$\Delta_f H(A) = -394$	82TN270
4					,	75COM/REI
CO <sub>3</sub> -			***************************************			
$co \cdot \cdot o_2^-$		.a. 50		TI 4TI TI	00.00 = 1.0 0.0 = 1.00	MAD A MOT
>-210 <sup>c</sup>		< 57		IMKB	$CO \cdot O_2^- + O_2 \rightarrow O_4^- + CO$	70ADA/BOH
CO <sub>3</sub> -						
CO <sub>2</sub> ··O <sup>-</sup> ·	00 00i	240.4		DD:		ONTITE REPOR
	3.3±0.2 i	218±4		PDis	Prove attudence and agent	80HIL/VES
-502	~ 2.070			LPES	From ethylene carbonate	83COM/REI 79NOV/ENG
	> 3.079 3.3±0.1			PD		77VES/MAU
-469±12 c	J.J#U.1	183±10		PDis		77VES/MAU
-407±12	2.7±0.1	100110		PD		77HON/WOO
	> 2.80	> 190 k			$O_3^- + CO_2 = CO_3^- + O_2$	77DOT/DAV
	100	174±10		PDis	-52 -32	76MOS/COS
	1.8±0.2			PD		72BUR
-469 <sup>c</sup>		183		PDis		79SMI/LEE
<del>-4</del> 69 °		100		LUIS		

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Υ¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CO <sub>3</sub> -		-		······································		
co₂··o⁻·						
-455 c		169		PDis		78SMI/LEE
−520±23 <sup>c</sup>		234±21 <sup>g</sup>	201±21	IMRE	$O_3^- + CO_2 = CO_3^- + O_2$	70ADA/BOH
CO4						
$co_2 \cdot \cdot o_2$						
-542±20 <sup>c</sup>		106±19		PDis	0.7.00.00.7.0	77VES/MAU
-515±10 -510±9 <sup>c</sup>			64.6		$O_4^- + CO_2 = CO_4^- + O_2$	70ADA/BOH
-310±9°			51±5	kine		66PAC/PHE2
CO <sub>5</sub> S <sup>-</sup>						
$co_2 \cdot \cdot so_3$					•	
-981±17 <sup>c</sup>		27±1	1±1	TDAs		80KEE/LEE
CS-						
CS <sup></sup> .					$\Delta_f H(A) = 268$	79HUB HER
• 248 b	0.205±0.02	1		LPES		82BUR/FEI
	> 1.6±0.3			EIAP	From COS	72THY
CS <sub>2</sub> -						
cs <sub>2</sub>					$\Delta_f H(A) = 117 \pm 1$	77PED/RYL
• 68±11 b	0.51±0.10			TDEq		87KEB/CHO
	0.53±0.11	_		IMRE		85GRI/CAL
	0.895±0.20	U		LPES		86OAK/ELL
	0.6±0.1			ECD		83CHE/WEN
	1.0±0.2 0.5±0.2			NBIP EnCT		75COM/REI
	0.9±0.3			IMRB	Between NH <sub>2</sub> -, C-	73HUG/LIP
	0.9±0.3			IMIND	Between Nn <sub>2</sub> , C	61KRA/MUL
CH-					$\Delta_f H(AH) = 390 \pm 8$	82TN270
CH-		_			BDE(A-H)= 423±18	79HUB HER
• 477±27 <sup>a</sup>	1.238±0.008	3 1616±18 <sup>e</sup>	1588±20 <sup>h</sup>	LPES		75KAS/HER2
	0.74±0.05			PD		70FEL
622	2.6±0.3			EIAP	From CH <sub>4</sub> , C <sub>2</sub> H <sub>2</sub> , C <sub>2</sub> H <sub>4</sub>	70LOC/MOM
633				EIAP	From CH <sub>4</sub>	63TRE/NEU
CHBrN-						
HCN·Br		<b>.</b> -		_		<b></b>
* -145±9 °		67±8		Est	Extrapolated from other halide data	84LAR/MCM3
CHCIF3-						
CHF3··CI						
• -992±12 <sup>c</sup>		70±10 <sup>g</sup>	41±8	IMRE		84LAR/MCM2
CHCIN-						
HCN··CI <sup>™</sup>						
* -180±10 <sup>c</sup>		88±8 <sup>g</sup>	58±8	<b>IMRE</b>		84LAR/MCM2

Table 2. Negative Ion Table - Continued

	=					
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CHCl <sub>2</sub> -					$\Delta_f H(AH) = -96 \pm 1$	77PED/RYL
CHCI2	_				BDE(A-H)= 422±5	83WEUBEN
-59±17 <sup>a</sup>	1.7±0.2 <sup>d</sup>	1567±16 g	1535±13	IMRB	Comparable to DMSO	72BOH/LEE
CHCl <sub>2</sub> F <sub>2</sub> -	•					
CHF <sub>2</sub> CI··CI <sup>-</sup> * -783±12 <sup>c</sup>		72±8 <sup>g</sup>	43±8	IMRE		84LAR/MCM2
-703±12		72.20	4310			04LAIVIVICIVIZ
CHCl3					A (//A) 405.0	77050101/1
CHCl <sub>3</sub> <sup>-,</sup> -274±7 <sup>b</sup>	1.76±0.05			SI	$\Delta_f H(A) = -105 \pm 2$	<i>77PED/RYL</i> 66GAI/KAY
-2/41/	1.70±0.05	·····	·			
CHCl <sub>3</sub> F-						
CHFCl <sub>2</sub> ··Cl <sup></sup> * -582 <sup>c</sup>		74±8 <sup>g</sup>	45.0	TA (DTZ		OAL A D DACNA
-302		74±8°	45±8	IMRE		84LAR/MCM2
CHCl <sub>3</sub> Si <sup>-</sup>						
HCS1Cl3						
142±42				EIAP	From MeSiCl <sub>3</sub>	68JAE/HEN
CHCl <sub>4</sub> -						
CHCl <sub>3</sub> ··Cl <sup>™</sup>						
* -396±12 <sup>c</sup>		64±8	45±8	TDAs		71YAM/KEB
410. C C		76±8 g	47±8	IMRE		84LAR/MCM2
-412±6 <sup>c</sup>		80±3	49±4 43	TDEq TDEq		74DOU/DAL 82FRE/IKU
CHF-					4 (//4) 400 40	051.14/K4D
HCF				IMDD	$\Delta_f H(A) = 109 \pm 12$	85LIA/KAR
<116				IMRB	O <sup>-</sup> + CH <sub>3</sub> F →	76DAW/JEN
CHFN-						
HCN··F		16 O F	400.0			001 4 77 77 673 6
* -279±11 <sup>c</sup>		165±8 <sup>g</sup>	138±8	IMRE		83LAR/MCM
CHF <sub>2</sub> -					$\Delta_f H(AH) = -453 \pm 1$	78KUD KUD
HCF2					$BDE(A-H) = 432\pm4$	83PIC/ROD
-364±28 a	1.3±0.3 <sup>d</sup>	1618±28 <sup>g</sup>	1586±25	IMRB		77SUL
CHF <sub>2</sub> O <sup>-</sup>						
HCF=O··F						
<-703 <sup>c</sup>		> 76		IMRB	FCO <sup>-</sup> + HCFO →	77KAR/KLE
CHF <sub>4</sub>		······································	<u></u>			
CF <sub>3</sub> H··F						
* -1057±12 °		113±8 <sup>g</sup>	82±8	IMRE		83LAR/MCM
CHN-						
HCN-					$\Delta_f H(A) = 135$	82TN270
<38 b	> 1.0			EIAP	From CH <sub>3</sub> CN	71TSU/YOK
					-	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CHNO <sub>2</sub> -		***************************************				
< 59 <sup>-</sup>				IMRB	$O^- + CH_3NO_2 \rightarrow$	59HEN/MUC
CHN <sub>2</sub> - CHN <sub>2</sub> -					$\Delta_f H(AH) = 230 \pm 17$	78VOG/WIL
262±38 <sup>a</sup>		1561±22 g	1527±17	IMRB	Near MeCN	83DEP/SCH
СНО-					$\Delta_f H(AH) = -109 \pm 1$	77PED RYL
HCO-			·		$BDE(A-H) = 364 \pm 3$	83MOO(SEI
• 8±4 <sup>a</sup>	0.313±0.00	5 1646±3 <sup>e</sup>	1613±5 <sup>h</sup>	LPES		86MUR/MIL
			1648±19	IMRB		75KAR/KLE
CDO-					_	
DCO-		_				00 tt 10 tt
	0.301±0.00	3		LPES		86MUR/MIL
CHOS-					$\Delta_f H(AH) = -182 \pm 8$	85KAS/DEP
HCOST			1435±13	IMRB		85KAS/DEP
СНО <sub>2</sub> -					$\Delta_f H(AH) = -379$	77PED RYL
HCO <sub>2</sub>					$BDE(A-H) = 444 \pm 8$	
• -464±13 a	3.23±0.21 C	1 1444±12 g	1415±8	IMRE		78CUM/KEB
		1446±12 g	1416±8	IMRE		81FUJ/MCI
CHO <sub>3</sub> -						
CO <sub>2</sub> ··OH¯						
-897 <sup>c</sup>		367		Endo		84HIE/PAU
СНО3-				Est2	$\Delta_f H(AH) = -280 \pm 42$	
HC(=0)00 <sup>-</sup>						
-260±46 <sup>a</sup>	< 1.1	1551±4 <sup>g</sup>	< 1523	IMRB		86BOW/DEP
CH <sub>2</sub> -		-			$\Delta_f H(AH) = 146 \pm 1$	81HEN/KNO
CH <sub>2</sub>					$BDE(A-H) = 462\pm2$	82TN270
* 327±1 <sup>b</sup>	0.652±0.00	6 1712±2 <sup>e</sup>	1679±3 <sup>h</sup>	LPES	Singlet-triplet splitting of $CH_2 = 37.7 \text{ kJ}$	85LEO/MUR
	0.670			LPES		85LEO/MUR
	0.210±0.01	5		LPES	Hot band problem	81ENG/COR
	0.208±0.03	1		LPES		76ZIT/ELL
			Hot band proble	m, singlet	-triplet splitting = 81.6 kJ	
	< 0.60±0.03	3		PD		77FEL/RAC
	>0.9±0.4			EIAP	From $CH_2 = CH_2$	71THY/MAC
<328±38				EIAP	From ketene	70COL/LOC
< 290				EIAP	From CH <sub>4</sub>	63TRE/NEU
CD <sub>2</sub> -						
					$\Delta_f H(A) = 390 \pm 1$	82TN270
CD <sub>2</sub> - CD <sub>2</sub> -	0.645±0.000	6		LPES	$\Delta_f H(A) = 390 \pm 1$	<i>82TN270</i> 85LEO/MUR

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
CH <sub>2</sub> Br <sup>-</sup> CH <sub>2</sub> Br <sup>-</sup> * 75±18 <sup>a</sup>	1.0±0.3 <sup>d</sup> 1.9	1643±16 <sup>g</sup>	1614±13	IMRB SI	$\Delta_f H(AH) = -38 \pm 1$ $BDE(A-H) = 427 \pm 8$	84BIC/MIN 82MCM/GOL 85ING/NIB2 69PAG/GOO
CH <sub>2</sub> Cl <sup>-</sup> CH <sub>2</sub> Cl <sup>-</sup> • 45±16 <sup>a</sup>	0.80±0.24	d 1657±15 g	1628±13 1641±17	IMRE IMRB	$\Delta_f H(AH) = -82\pm 1$ $BDE(A-H) = 422\pm 8$	79KUDIKUD 82MCMIGOL 85ING/NIB2 85HEN/HIE
CH <sub>2</sub> ClO <sub>2</sub> <sup>-</sup> HCO <sub>2</sub> H··Cl <sup>-</sup> • -721±10 °		115±8 107±8 <sup>g</sup> 156±8	84±8 77±8 106±8	TDAs IMRE TDAs		82FRE/IKU 84LAR/MCM2 71YAM/KEB
CH <sub>2</sub> Cl <sub>3</sub> <sup>-</sup> CH <sub>2</sub> Cl <sub>2</sub> ··Cl <sup>-</sup> • -389±10 °		66±8 <sup>g</sup> 65±1	38±8 37±3	IMRE TDEq		84LAR/MCM2 74DOU/DAL
CH <sub>2</sub> FO <sub>2</sub> <sup>-</sup> HCO <sub>2</sub> H··F <sup>-</sup> * -817±11 °		190±8 g	159±8	IMRE		83LAR/MCM
CH <sub>2</sub> I <sup>-</sup> CH <sub>2</sub> I <sup>-</sup> 102±25 <sup>a</sup>		1617±24 g	1587±20	IMRB	$\Delta_f H(AH) = 15\pm 1$	77PED/RYL 85ING/NIB2
CH <sub>2</sub> IO <sub>2</sub> - HCO <sub>2</sub> H···I- • -646±5 c		79±4	53±9	TDAs		84CAL/KEB
CH <sub>2</sub> N <sup>-</sup> CH <sub>2</sub> =N <sup>-</sup> 230 a	0.51±0.07	1625±22 <sup>g</sup>	1594±21	IMRB	$\Delta_f H(AH) = 135$ EA: between O <sub>2</sub> and cyclooctatetraene	78DEFIHEH 85KAS/DEP
CH <sub>2</sub> NO <sup>-</sup> CH <sub>2</sub> =NO <sup>-</sup> <56		<1557 <sup>f</sup>		Est2 EIAP	$\Delta_f H(AH) = 29 \pm 13$ From MeNO <sub>2</sub>	72DID/FRA
CH <sub>2</sub> NO <sup>-</sup> HN=CHO <sup>-</sup> * -210 a		1506±11 <sup>g</sup>	1476±8	IMRE	$\Delta_f H(AH) = -186$	69BEN CRU 86TAF
CH <sub>2</sub> NO <sup>-</sup> HOH··CN <sup>-</sup> * -225 c		58±8	33±8	TDAs		71PAY/YAM

Table 2. Negative Ion Table - Continued

$\begin{array}{c} \text{CH}_2\text{NO}_2^- \\ \text{CH}_2 = \text{NO}_2^- \\ & -114 \pm 13 \text{ a} \\ \\ \text{84} \\ \\ \\ \text{CH}_2\text{NS}^- \\ \text{CH}_2 = \text{NS}^- \\ \\ \\ \text{CH}_2\text{S} \cdot \text{CN}^- \\ & -29 \pm 24 \text{ c} \\ \\ \\ \\ \text{CH}_2\text{O}_4^- \\ \text{HOH} \cdot \text{CO}_3^- \end{array}$	<2.36 0.5	1491±12 g 1495±12 g	1463±8 1467±8 1467±8 1473±8	IMRE IMRE IMRE EIAP IMRE <sup>0</sup>	$\Delta_f H(AH) = -75\pm 1$ EA: $< NO_2$ From $CH_3NO_2$	77PED/RYL 79BAR/SCO 78CUM/KEB 78MAC/BOH 69TSU/YOK 79BAR/SCO
* -114±13 a  84  CH <sub>2</sub> NS <sup>-</sup> CH <sub>2</sub> =NS <sup>-</sup> CH <sub>2</sub> S··CN <sup>-</sup> * -29±24 c  CH <sub>2</sub> O <sub>4</sub> <sup>-</sup>			1467±8 1467±8 1473±8	IMRE IMRE EIAP	From CH <sub>3</sub> NO <sub>2</sub>	78CUM/KEB 78MAC/BOH 69TSU/YOK
$CH_2NS^-$ $CH_2=NS^-$ $CH_2NS^-$ $H_2S \cdot CN^-$ $-29\pm24$ $CH_2O_4^-$		1495±12 g	1467±8 1473±8	IMRE EIAP	From CH <sub>3</sub> NO <sub>2</sub>	78MAC/BOH 69TSU/YOK
$CH_2NS^-$ $CH_2=NS^-$ $CH_2NS^-$ $H_2S \cdot CN^-$ $-29\pm24$ $CH_2O_4^-$			1473±8	EIAP	From CH <sub>3</sub> NO <sub>2</sub>	69TSU/YOK
$CH_2NS^-$ $CH_2=NS^-$ $CH_2NS^-$ $H_2S \cdot CN^-$ $-29\pm24$ $CH_2O_4^-$	0.5					
CH <sub>2</sub> =NS <sup>-</sup> CH <sub>2</sub> NS <sup>-</sup> H <sub>2</sub> S··CN <sup>-</sup> • -29±24 c  CH <sub>2</sub> O <sub>4</sub> <sup>-</sup>				IMRE		79BAR/SCO
CH <sub>2</sub> =NS <sup>-</sup> CH <sub>2</sub> NS <sup>-</sup> H <sub>2</sub> S··CN <sup>-</sup> • -29±24 c  CH <sub>2</sub> O <sub>4</sub> <sup>-</sup>			1436±15			
CH <sub>2</sub> NS <sup>-</sup> H <sub>2</sub> S··CN <sup>-</sup> -29±24 c  CH <sub>2</sub> O <sub>4</sub> <sup>-</sup>			1436±15			
H <sub>2</sub> S··CN <sup>+</sup> -29±24 c  CH <sub>2</sub> O <sub>4</sub> <sup>-</sup>			1100210	<b>IMRB</b>		85KAS/DEP
H <sub>2</sub> S··CN <sup>+</sup> -29±24 c  CH <sub>2</sub> O <sub>4</sub> <sup>-</sup>						0012 10/2011
-29±24 c CH <sub>2</sub> O <sub>4</sub> -						
CH <sub>2</sub> O <sub>4</sub> -		83±15 g	52±10	IMRE		87LAR/MCM
11011						
• -793 °		48±4 B	28±2	IMRE		74FEH/FER
>-906 <sup>c</sup>		< 161		PDis		78SMI/LEE
	1.9±0.2			PD		72BUR
-792				PDis		76COS/LIN
CH <sub>2</sub> S <sup>-</sup>						
$CH_2 = S^{-1}$					$\Delta_f H(A) = 100 \pm 13$	76BEN
56±15 b	0.465±0.023			LPES		87MOR/ELL
CH <sub>3</sub> -						
CH <sub>3</sub>		_			$\Delta_f H(A) = 147 \pm 5$	82MCM/GOL
• 139±8 <sup>a</sup>	7.8±0.030	1744±7 <sup>e</sup>	1710±7 h	LPES		78ELL/ENG
	< 0.5	~		PD		77FEL/RAC
	< 0.6 <sup>d</sup>	> 1691 <sup>g</sup>	> 1657	IMRB		72BOH/LEE
	1.1			SI		72PAG
	1.0 1.1			SI SI		69PAG/GOO 68GAI/PAG
CH <sub>3</sub> BF <sub>3</sub> O <sup>-</sup>						
BF <sub>3</sub> ··MeO <sup>-</sup> <-1477±13	c	> 92±8		IMRB	MeOH··MeO <sup>-</sup> + BF <sub>3</sub> →	73BLA/ISO
CH <sub>3</sub> BrCl <sup>-</sup> MeBr··Cl <sup>-</sup>						
-311±4 °		46±2	30±5	TDAs		74DOU/ROB
		51±13			Anchored: 84LAR/MCM	73RIV/BRE
CH <sub>3</sub> Br <sub>2</sub> -			- verogy v			
MeBr··Br		38±2	21±3	TDAs		74DOU/ROB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$ $\Delta G_{acid}(AH)$ Method Comm $\Delta_f H(X \cdots Y^-)$ eV $\Delta H_{aff}(X \cdots Y^-)$ $\Delta G_{aff}(X \cdots Y^-)$ CH <sub>3</sub> ClF <sup>-</sup> MeF··Cl <sup>-</sup>	ent Reference
MeF··Cl <sup>−</sup>	
MeF··Cl <sup>−</sup>	
_	
* -522 <sup>c</sup> 48±8 IMRE	84LAR/MCM2
CH <sub>3</sub> ClF <sub>3</sub> Si <sup>-</sup>	
McSiF <sub>3</sub> ··Cl <sup>-</sup>	
• -1532 <sup>c</sup> 67±8 <sup>g</sup> 40±8 IMRE	85LAR/MCM
CH <sub>3</sub> CII <sup>-</sup>	
MeI··Cl <sup>™</sup>	
-253±3 <sup>c</sup> 41±1 29±5 TDAs	74DOU/ROB
CH <sub>3</sub> CINO <sub>2</sub> -	
McNO <sub>2</sub> ··CI	
-371±14 <sup>c</sup> 68±13 IMRB Anchored: 84LAR/MCM	73RIV/BRE
CH <sub>3</sub> Cl <sub>2</sub> <sup>-</sup>	
MeCl··Cl	
• -360±10 <sup>c</sup> 51±8 <sup>g</sup> 26±8 IMRE	84LAR/MCM2
36±1 17±2 TDAs	74DOU/DAL
$CH_3Cl_2Si^- \qquad \qquad \Delta_f H(AH) = -402\pm 4$	77PED/RYL
MeSiCl <sub>2</sub> <sup>-</sup> -105±21 1828±25 <sup>f</sup> EIAP From MeSiCl <sub>3</sub> , probably ca	200 kJ more stable 691 A B/MEN
-105±21 1828±25 <sup>I</sup> EIAP From MeSiCl <sub>3</sub> , probably ca	a. 300 kJ more stable 68JAE/HEN
CH <sub>3</sub> F <sub>4</sub> Si <sup>-</sup>	
$MeSiF_3 \cdot F$ * -1697 c 211±8 g 180±8 IMRE	85LAR/MCM
* -1697 <sup>C</sup> 211±8 <sup>E</sup> 180±8 IMRE 257±21 IMRB	77MUR/BEA3
2/121 IMO	· · · · · · · · · · · · · · · · · · ·
CH <sub>3</sub> I <sup>-</sup>	77PED/RYL
CH <sub>3</sub> $\Gamma$ · $\Delta_f H(A) = 15\pm 1$ -13 $\pm 20$ b 0.3 $\pm 0.2$ NBIP Vertical EA	74MOU/ATE
CH <sub>3</sub> I <sub>2</sub> <sup>−</sup> Mel··I <sup>−</sup>	
-210±10 <sup>c</sup> 38±8 17±1 TDAs	74DOU/ROB
CH <sub>3</sub> NO <sub>2</sub> -	
$CH_3NO_2^{-1} \qquad \Delta_f H(A) = -75\pm 1$	77PED/RYL
* -121±11 b 0.48±0.10 TDEq	87KEB/CHO
0.49±0.11 IMRE	85GRI/CAL
0.45±0.05 ECD	83CHE/WEN
0.4±0.2 NBIP	78COM/REI2
$CH_3N_2O^- \qquad \qquad \Delta_f H(AH) = -246\pm 2$	77PED RYL
$HN = C(NH_2)O^{-}$ * -259±15 <sup>a</sup> 1517±13 <sup>g</sup> 1487±10 IMRE	86TAF

Table 2. Negative Ion Table - Continued

MoC - 139±10 <sup>8</sup> 1.62±0.14 <sup>4</sup> 159±9 <sup>8</sup> 1565±8 IMRE         IMRE 79BANS         226CH-H) = 437±4         224CH-H         224TH FROM 79BANS         79BAN	Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
• -139±10 <sup>8</sup> 1-62±0.14 <sup>4</sup> 1592±9 <sup>8</sup> 1565±8 IMRE • 1.57±0.0022 1597±6 <sup>8</sup> LPES 78ENG/E 1.59±0.04 PD 78INEM  • 1.59±0.04 PD 78INEM  • 1.59±0.04 PD 78INEM  2.6 EHAP From M±OMe GHTSUM  0.4 SI 69PAG/G  CD30 CD30 1555±8 IMRE 78ENG/E  CD30 1.552±0.022 LPES 78ENG/E  CH3O3 1.552±0.024 L93±12 8 1467±8 IMRE 78ENG/E  1.851±0.004 LPD 80JAN/RI  1.851±0.004 LPD 80J	CH <sub>3</sub> O <sup>-</sup>					$\Delta_{\mathbf{f}}H(AH) = -202$	77PED/RYL
1.579±0.04 PD 7812N72 1.59±0.04 PD 7812N72 1.59±0.05 PT PT PT M M COMe 6715U1H 1.59±0.07 PD APR 1.59±0.072 PT M M COMe 6715U1H 1.59±0.072 PT M M COMe 6715U1H 1.59±0.072 PD APR 1.59±0.072 PT M M COMe 6715U1H 1.59±0.072 PT M M M M M M M M M M M M M M M M M M						BDE(A-H)= 437±4	82MCM/GOL
1.59±0.04	• -139±10 <sup>a</sup>	1.62±0.14	d 1592±9 g	1565±8	IMRE		79BAR/SCO
C1.592.0.4   PD   TRREEB   86MEO/S	•	1.570±0.0	22 1597±6 <sup>e</sup>		LPES		78ENG/ELL
1595±2 1569±3 TDEq EIAP From MeOMe GITSUH GFTSUH G		1.59±0.04			PD		78JAN/ZIM
2.6 G4TSUM, 0.4 SI G9PAG/G  CD3O"  CD3O"  1.552±0.022 LPES 78ENG/E  CH4O3"  HOH-HCQ2"  -773 67±4 38±7 TDAs 86MEO/S  CH3S"  MeS"  -60±13 1,90±0.22 d 1493±12 8 1467±8 IMRE  -1882±0.022 1±PES 78ENG/E  1.861±0.004 1±PD 80JAN/BI  1.861±0.004 1±PD 80JAN/BI  1.81±0.004 1±PD 80JAN/BI  1.81±0.004 1±PD 80JAN/BI  CD3S"  CD3S"  CD3S"  CD3S"  1.858±0.006 LPD 80JAN/BI  CH4CIO"  McOH-CI"  -488±10 72±8 41±8 IMRE  73±8 43±11 TDAs 867AM/F  59 41 TDEq 82FREJ/R  CH4FO"  McOH-F"  -574±11 1 124±8 55±8 IMRE  S3LAR/M  CCH4FO"  McOH-F"  -574±11 1 124±8 55±8 IMRE  S3LAR/M  CCH4FO"  McOH-F"  -574±11 1 124±8 55±8 IMRE  S3LAR/M  CCH4FO"  McOH-F"  -574±11 1 143±8 IMRE  S3LAR/M  CCH4FO-MCOH-F"  -415±11 1 143±8 IMRE  S3LAR/M  CCH4FO-MCOH-FT  -415±11 1 143±8 IMRE  S4LAR/M  CCH4FO-MCOH-FT		< 1.59±0.0	04		PD		75REE/BRA
CD <sub>3</sub> O <sup>-</sup> CD <sub>3</sub> O <sup>-</sup> CD <sub>3</sub> O <sup>-</sup> 1.552±0.022  LPES  T8ENG/E  CH <sub>3</sub> O <sub>3</sub> - HOH··HCO <sub>2</sub> 773° 67±4 38±7 TDAs  S6MEO/S  CH <sub>3</sub> S- MeS -60±13 a 1.90±0.22 d 1493±12 g 1467±8 IMRE 1.885±0.002 1.861±0.004 1.801±0.004 1.801±0.004 1.4 1.811±0.004 1.4 1.811±0.004 1.4 1.416±8 1MRE  CD <sub>3</sub> S- CD <sub>3</sub> S- CD <sub>3</sub> S- 1.858±0.006  LPD  S0JAN/BI  CH <sub>4</sub> ClO <sup>-</sup> MeOH··CΓ  MeOH··FΓ -574±11 c 124±8 g 55±8 IMRE  S1AR/M  CH <sub>4</sub> FO- MeSH··FΓ -574±11 c 124±8 g 55±8 IMRE  S1AR/M  CH <sub>4</sub> FO- MeSH··FΓ -574±11 c 124±8 g 1MRE  S1AR/M  MRE  S1AR/M  S1 S24AR/M  S25AR/M  S25AR/M			1595±2	1569±3	TDEq		86MEO/SIE
CD <sub>3</sub> O <sup>−</sup> CD <sub>3</sub> O <sup>−</sup> CD <sub>3</sub> O <sup>−</sup> 1.552±0.022  LPES  78ENG/E  CH <sub>3</sub> O <sub>3</sub> HOH··HCO <sub>2</sub> -773 ° 67±4 38±7 TDAs  86MEO/S  CH <sub>3</sub> S MeS MeS -60±13 <sup>a</sup> 1,90±0.22 <sup>d</sup> 1493±12 <sup>g</sup> 1467±8 MeS -1.882±0.022 1.801±0.004 1.81±0.004 1.81±0.004 1.81±0.004 1.4 SI 1.801±0.004 1.4 SI 69FAG/G 1.476±8 MRE  CD <sub>3</sub> S <sup>−</sup> CD <sub>3</sub> S <sup>−</sup> 1.858±0.006  LPD  80JAN/EI  CH <sub>4</sub> ClO <sup>−</sup> MeOH··C□ -488±10 ° 79±8 41±8 10As 72±8 43±11 TDAs 80YAM/E  CH <sub>4</sub> FO <sup>−</sup> MeOH··F -57±11 ° 124±8 5 5±8 1MRE  MRE  83LAR/M  CCH <sub>4</sub> FS <sup>−</sup> MeSH··F -57±11 ° 143±8 114±8 1MRE  83LAR/M  CCH <sub>4</sub> FS <sup>−</sup> MeSH··F -415±11 ° 143±8 114±8 1MRE  83LAR/M  CCH <sub>4</sub> CHO MeOH··Γ	•	2.6			EIAP	From MeOMe	64TSU/HAM
CD <sub>3</sub> O <sup>-</sup> CD <sub>3</sub> O <sup>-</sup> 1.552±0.022  LPES  78ENG/E  CH <sub>3</sub> O <sub>3</sub> HOH: -HCO <sub>2</sub> -773 c  67±4  38±7  TDAs  86MEO/S  CH <sub>3</sub> S <sup>-</sup> MeS <sup>-</sup> MeS <sup>-</sup> BOE(A-H)= -23  FPECH  * -60±13 a 1.90±0.22 d 1493±12 g 1467±8  1.861±0.004 1.861±0.004 1.861±0.004 1.4 1.861±0.004 1.4 1.4 1.87±8 1MRE  79BAR/S  CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> 1.858±0.006  LPD  80JAN/BI  CH <sub>4</sub> ClO <sup>-</sup> MeOH··Cl <sup>-</sup> * -488±10 c 59±8 41±8 IMRE  70±8 g 41±8 IMRE  85LAR/M  CH <sub>4</sub> FO <sup>-</sup> MeOH··Γ <sup>-</sup> * -57±11 c 124±8 g 55±8 IMRE  83LAR/M  CH <sub>4</sub> FO <sup>-</sup> MeSH··Γ <sup>-</sup> * -415±11 c 143±8 IMRE  83LAR/M  CH <sub>4</sub> FO <sup>-</sup> MeOH··Γ		0.4			SI		69PAG/GOO
CH <sub>3</sub> O <sub>3</sub> -				1559±8	IMRE		79BAR/SCO
CH <sub>3</sub> O <sub>3</sub> <sup>-</sup> HOH.·HCO <sub>2</sub> <sup>-</sup> -773 c 67±4 38±7 TDAs 86MEO/S  CH <sub>3</sub> S <sup>-</sup> MeS <sup>-</sup> -60±13 a 1.90±0.22 d 1493±12 g 1467±8 IMRE 79BAR/S  • -60±13 a 1.90±0.22 d 1493±12 g 1467±8 IMRE 79BAR/S  • 1.881±0.004 LPD 80IAN/RI 1.861±0.004 LPD 80IAN/RI 1.861±0.004 LPD 80IAN/RI 1.4 SI 69PAG/G 79BAR/S  CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> 1.888±0.006 LPD 80IAN/BI  CH <sub>4</sub> CIO <sup>-</sup> McOH··Cl <sup>-</sup> • -488±10 c 59±8 41±8 TDAs 71YAM/R 73±8 41±8 IMRE 81AAR/M 73±8 43±11 TDAs 847AM/R  73±8 43±11 TDAs 867AM/R  CH <sub>4</sub> FO <sup>-</sup> McOH··F <sup>-</sup> • -57±±11 c 124±8 g 95±8 IMRE 83IAR/M  CH <sub>4</sub> FS <sup>-</sup> McSH··F <sup>-</sup> • -57±±11 c 124±8 g 95±8 IMRE 83IAR/M  CH <sub>4</sub> FS <sup>-</sup> McSH··F <sup>-</sup> • -415±11 c 143±8 IMRE 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup> McSH··I <sup>-</sup> 143±8 IMRE 83IAR/M  CCH <sub>4</sub> FS <sup>-</sup> McSH··F <sup>-</sup> • -415±11 c 143±8 IMRE 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup> McOH··I <sup>-</sup> 143±8 IMRE 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup> 143±8 IMRE 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup> 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup> 143±8 IMRE 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup> 83IAR/M  CCH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup>							
CH <sub>3</sub> O <sub>3</sub> <sup>-</sup> HOH··HCO <sub>2</sub> <sup>-</sup> -773° 67±4 38±7 TDAs 866MeO/S  CH <sub>3</sub> S <sup>-</sup> MeS <sup>-</sup> MeS <sup>-</sup> 1.80±0.022 1493±12 8 1467±8 IMRE 79BAR/S 1.80±0.004 1PD 801AN/RI 1.861±0.004 1PD 801AN/RI 1.861±0.004 1PD 801AN/RI 1.861±0.004 1FD 801AN/RI 1.87 69PAG/G  CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> 1.858±0.006 1PD 801AN/RI  CH <sub>4</sub> CIO <sup>-</sup> MeOH··Cl <sup>-</sup> * -488±10° 59±8 41±8 IMRE 79±8 1MRE 84LAR/M 79±8 43±11 TDAs 8674M/F  41 TDEq 82FRE/K 795 41 TDAs 73YAM/F  CH <sub>4</sub> FO <sup>-</sup> MeOH··F <sup>-</sup> * -574±11° 124±8 95±8 IMRE 83LAR/M  CH <sub>4</sub> FS <sup>-</sup> MeSH··F <sup>-</sup> * -415±11° 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup> * -415±11° 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup> * -415±11° 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup> * -415±11° 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup> * -415±11° 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup> * -415±11° 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>	CD <sub>3</sub> O	1.552±0.02	22		LPES		78ENG/ELL
HOH.·HCO2 <sup>-</sup> -773 c 67±4 35±7 TDAs 86MEO/S  CH3S <sup>-</sup>	CH <sub>2</sub> O <sub>2</sub> -		· · · · · · · · · · · · · · · · · · ·		***	•	
-773 ° 67±4 38±7 TDAS 86MEO/S  CH <sub>3</sub> S⁻		<u>-</u>					
MeS"  - 60±13 <sup>8</sup> 1,90±0.22 <sup>d</sup> 1493±12 <sup>g</sup> 1467±8 IMRE  - 1.882±0.022 LPES 78ENG/E  - 1.861±0.004 LPD 80JAN/RI  1.861±0.004 LPD 80JAN/RI  1.861±0.004 LPD 80JAN/RI  1.4 SI 69PAG/G  - 1476±8 IMRE  CD <sub>3</sub> S"  CD <sub>3</sub> S"  - 1.858±0.006 LPD 80JAN/RI  CH <sub>4</sub> CIO"  MeOH··CI"  - 488±10 <sup>c</sup> 59±8 41±8 TDAs 71YAM/R  73±8 43±11 TDAs 86YAM/F  - 41 TDEq 82FREJK  59 41 TDAs 73YAM/P  CH <sub>4</sub> FO"  MeOH··F" 574±11 <sup>c</sup> 124±8 95±8 IMRE 83LAR/M  CH <sub>4</sub> FS"  MeSH··F"  - 415±11 <sup>c</sup> 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IO"  MeOH··I"			67±4	38±7	TDAs		86MEO/SIE2
• −60±13 <sup>8</sup> 1.90±0.22 <sup>d</sup> 1493±12 <sup>g</sup> 1467±8 IMRE 79BAR/S6 • 1.882±0.002 IPES 78ENG/E 1.861±0.004 IPD 80JAN/R1 1.861±0.004 IPD 80JAN/R1 1.4 SI 69PAG/G 79BAR/S6  CD <sub>3</sub> S⁻ CD <sub>3</sub> S⁻ CD <sub>2</sub> S⁻ 1.858±0.006 IPD 80JAN/B1  CH <sub>4</sub> CIO⁻ McOH··Cl⁻ • −488±10 <sup>c</sup> 59±8 41±8 IMRE 70±8 32FRE/IK 70±8 43±11 TDAs 867AM/F	CH <sub>3</sub> S <sup>-</sup>						77PED/RYL
* 1.882±0.022						BDE(A-H)= 364±9	83SHU/BEN
1.861±0.004	• -60±13 a	1.90±0.22	d 1493±12 g	1467±8	IMRE		79BAR/SCO
1.861±0.004 1.4 1.4 1.5 1.661±0.005 1.476±8 1MRE <sup>0</sup> 79BAR/SI  CD <sub>3</sub> S⁻ CD <sub>3</sub> S⁻ CD <sub>3</sub> S⁻ CD <sub>3</sub> S⁻ 1.858±0.006 1PD 80JAN/BI  CH <sub>4</sub> CIO⁻ McOH··Cl⁻ • -488±10 c 70±8 41±8 1MRE 70±8 43±11 1DAs 86YAM/F 41 1DEq 82FRE/IK 59 41 1DAs 73YAM/P  CH <sub>4</sub> FO⁻ McOH··F⁻ • -574±11 c 124±8 95±8 1MRE 83LAR/M  CH <sub>4</sub> FS⁻ McSH··F⁻ • -415±11 c 143±8 1MRE 83LAR/M  CCH <sub>4</sub> IS⁻ McOH··I⁻	•	1.882±0.02	22		LPES		78ENG/ELL
1.4 SI 69PAG/O 79BAR/SC  CD <sub>3</sub> S <sup>-</sup> CD <sub>3</sub> S <sup>-</sup> 1.858±0.006 LPD 80JAN/BI  CH <sub>4</sub> CIO <sup>-</sup> MeOH··Cl <sup>-</sup> • -488±10 c 59±8 41±8 TDAs 71YAM/K 70±8 41±8 IMRE 84LARM 73±8 43±11 TDAs 86YAM/F 41 TDEq 82FRE/IK 59 41 TDAs 73YAM/F  CH <sub>4</sub> FO <sup>-</sup> MeOH··F <sup>-</sup> • -574±11 c 124±8 8 95±8 IMRE 83LAR/M  CH <sub>4</sub> FS <sup>-</sup> MeSH··F <sup>-</sup> • -415±11 c 143±8 114±8 IMRE 83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>		1.861±0.00	04		LPD		80JAN/REE
The state of the		1.861±0.00	04		LPD		80JAN/BRA
CD <sub>3</sub> S <sup>-</sup> 1.858±0.006  LPD  80JAN/BI  CH <sub>4</sub> CIO <sup>-</sup> MeOH··Cl <sup>-</sup> -488±10		1.4			SI		69PAG/GOO
CD <sub>3</sub> S <sup>-</sup> 1.858±0.006  LPD  80JAN/BI  CH <sub>4</sub> CIO <sup>-</sup> MeOH··Cl <sup>-</sup> • -488±10 c  59±8 41±8 TDAs  70±8 41±8 IMRE  84LAR/M  73±8 43±11 TDAs  41 TDEq  82FRE/IK  59 41 TDAs  73YAM/P  CH <sub>4</sub> FO <sup>-</sup> MeOH··F <sup>-</sup> • -574±11 c  124±8 8  95±8 IMRE  83LAR/M  CH <sub>4</sub> IS <sup>-</sup> MeSH··F <sup>-</sup> • -415±11 c  143±8 8  114±8 IMRE  83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>				1476±8	IMRE <sup>0</sup>		79BAR/SCO
CH <sub>4</sub> CIO <sup>-</sup> McOH··CI <sup>-</sup> -488±10 <sup>c</sup> 59±8 41±8 TDAs  70±8 41±8 IMRE  84LAR/M  73±8 43±11 TDAS  41 TDEq  82FRE/IK  59 41 TDAS  73YAM/P  CH <sub>4</sub> FO <sup>-</sup> McOH··F <sup>-</sup> -574±11 <sup>c</sup> 124±8 <sup>g</sup> 95±8 IMRE  83LAR/M  CH <sub>4</sub> FS <sup>-</sup> McSH··F <sup>-</sup> -415±11 <sup>c</sup> 143±8 <sup>g</sup> 114±8 IMRE  83LAR/M  CH <sub>4</sub> IO <sup>-</sup> McOH··I <sup>-</sup>							
MeOH··CI <sup>-</sup> • -488±10 <sup>c</sup> 59±8  41±8  1MRE  84LAR/M  73±8  43±11  TDAs  86YAM/F  41  TDEq  82FRE/IK  59  41  TDAs  73YAM/P   CH <sub>4</sub> FO <sup>-</sup> MeOH··F <sup>-</sup> • -574±11 <sup>c</sup> 124±8 <sup>g</sup> 95±8  1MRE  83LAR/M  CH <sub>4</sub> FS <sup>-</sup> MeSH··F <sup>-</sup> • -415±11 <sup>c</sup> 143±8 <sup>g</sup> 114±8  1MRE  83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>		1.858±0.00	06		LPD		80JAN/BRA
* -488±10 °							
70±8 g 41±8 IMRE 84LAR/M 73±8 43±11 TDAs 86YAM/F 41 TDEq 82FRE/IK 59 41 TDAs 73YAM/P  CH4FO⁻ MeOH··F⁻ • -574±11 c 124±8 g 95±8 IMRE 83LAR/M  CH4FS⁻ MeSH··F⁻ • -415±11 c 143±8 114±8 IMRE 83LAR/M  CH4IO⁻ MeOH··Γ⁻			€0+8	41+R	TDAs		71 <b>Y</b> AM/KER
73±8 43±11 TDAs 86YAM/F 41 TDEq 82FRE/IK 59 41 TDAs 73YAM/P  CH <sub>4</sub> FO⁻ McOH··F⁻ • -574±11 <sup>c</sup> 124±8 <sup>g</sup> 95±8 IMRE 83LAR/M  CH <sub>4</sub> FS⁻ McSH··F⁻ • -415±11 <sup>c</sup> 143±8 <sup>g</sup> 114±8 IMRE 83LAR/M  CH <sub>4</sub> IO⁻ McOH··I⁻	400110						84LAR/MCM2
## TDEq ## 82FRE/IK  ## TOAs							86YAM/FUR
59       41       TDAs       73YAM/P         CH <sub>4</sub> FO⁻ MeOH··F⁻ • −574±11 °       124±8 g       95±8       IMRE       83LAR/M         CH <sub>4</sub> FS⁻ MeSH··F⁻ • −415±11 °       143±8 g       114±8       IMRE       83LAR/M         CH <sub>4</sub> IO⁻ MeOH··I⁻       140±8       IMRE       83LAR/M			7520				
MeOH · · F  • -574±11 ° 124±8 \$ 95±8 IMRE 83LAR/M  CH <sub>4</sub> FS <sup>-</sup> MeSH · · F  • -415±11 ° 143±8 \$ 114±8 IMRE 83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH · · I <sup>-</sup>			59		-		73YAM/PAY
• -574±11 ° 124±8 8 95±8 IMRE 83LAR/M  CH <sub>4</sub> FS <sup>-</sup> MeSH··F <sup>-</sup> • -415±11 ° 143±8 8 114±8 IMRE 83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>						and the second s	***************************************
CH <sub>4</sub> FS <sup>-</sup> MeSH··F <sup>-</sup> -415±11 <sup>c</sup> 143±8 <sup>g</sup> 114±8 IMRE  83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>			_				
MeSH··F¯ • -415±11 ° 143±8 Ø 114±8 IMRE 83LAR/M  CH <sub>4</sub> IO¯ MeOH··I¯	• -574±11 <sup>c</sup>	· · · · · · · · · · · · · · · · · · ·	124±8 g	95±8	IMRE		83LAR/MCM
• -415±11 ° 143±8 Ø 114±8 IMRE 83LAR/M  CH <sub>4</sub> IO <sup>-</sup> MeOH··I <sup>-</sup>							
MeOH··I <sup>™</sup>			143±8 8	114±8	IMRE		83LAR/MCM
			<u> </u>		<u> </u>		
• ~437±5 <sup>c</sup> 47±4 25±9 TDAs 84CAL/KI			47+4	25+9	TDAs		84CAL/KEB

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Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CH <sub>4</sub> N <sup>-</sup>					$\Delta_f H(AH) = -23$	77PED/RYL
MeNH <sup>-</sup>					BDE(A-H)= 418±10	82MCM/GOL
* 134±5 <sup>a</sup>	0.45±0.16	1687±5 g	1656±3	IMRE		76MAC/HEM
	<1.6			EIAP	From MeNH <sub>2</sub>	68COL/HUB
CH <sub>4</sub> O <sub>3</sub> - MeOH··O <sub>2</sub> -						
* -324±5 c		80±4	52±4	TDAs		73YAM/PAY
СН <sub>5</sub> О <sub>2</sub> - НОН · · МеО						
-481 <sup>c</sup>		100±1	71±1	TDAs		86MEO/SIE
C <sub>2</sub> -					$\Delta_{f}H(AH) = 565\pm4$	82MCM/GOL
c <sub>2</sub>					BDE(A-H) = 485±5	79HUB HER
* 505±2 b	3.391±0.01	7 1470±7 <sup>e</sup>		LPD		80JON/MEA
	3.54±0.05			PD		70FEL
> 596±18 a		> 1561±13 g	>1531±8	IMRB		75SCH/BOH
	> 2.9±0.5			EIAP	From C <sub>2</sub> H <sub>4</sub>	71THY/MAC
	3.3±0.2			EIAP	From C <sub>2</sub> H <sub>2</sub> , C <sub>2</sub> H <sub>4</sub>	70LOC/MOM
<826±19	*			EIAP	From ketene	70COL/LOC
	> 2.9			EIAP	From C <sub>2</sub> H <sub>4</sub>	63TRE/NEU
	4.0			EIAP	From graphite	54HON
C <sub>2</sub> ClF <sub>4</sub> O				<del></del>		
CF <sub>3</sub> CF=O··	C1 <sup>-</sup>					
* -1339±30 °		70±8 g	42±8	IMRE		85LAR/MCM
C <sub>2</sub> Cl <sub>2</sub> F <sub>3</sub> O						
CF3CCI=O··	CI <sup>-</sup>					
* -1143±30 °		74±8 g	47±8	IMRE		85LAR/MCM
C <sub>2</sub> Cl <sub>5</sub>				<del>*!</del>		
C <sub>2</sub> Ci <sub>5</sub> <sup>-</sup>						
	1.5			SI	Correct value probably 1 eV larger	66GAI/KAY
C <sub>2</sub> Cl <sub>6</sub> -						
C2C16-					$\Delta_f H(A) = -150 \pm 5$	83KOLIPAP
	1.48±0.10			SI		66GAI/KAY
C <sub>2</sub> F-					$\Delta_f H(AH) = 109$	80STAIVOG
FC≡C					$BDE(A-H) = 552\pm21$	
	> 3.4±0.8	<1536±98 e	< 1504±100 h	EIAP	From $CH_2 = CF_2$	71THY/MAC
C <sub>2</sub> F <sub>2</sub> -						
$F_2C = C^{-1}$						
< 15				IMRB	$O^- + CH_2 = CF_2 \rightarrow$	76DAW/JEN
-646±58	1.7±0.2			EIAP	From CF <sub>3</sub> CHO	75HAR/THY

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> F <sub>2</sub> O <sup>-</sup>						
$F_2C=C=O^{-1}$						
−156±58	2.4±0.6			EIAP	From CF <sub>3</sub> CHO	75HAR/THY
C <sub>2</sub> F <sub>3</sub>					$\Delta_f H(AH) = -490 \pm 8$	77PED/RYL
C <sub>2</sub> F <sub>3</sub>					BDE(A-H)= 516±17	83SPY SAU
-391±19	2.1±0.2 <sup>i</sup>	1630±36 <sup>e</sup>		EIAP	From C <sub>3</sub> F <sub>8</sub>	83SPY/SAU
	> 1.6			EIAP	From CF <sub>3</sub> CF = CFCF <sub>3</sub>	79SAU/CHR
-637±58				EIAP	From CF <sub>3</sub> CF <sub>2</sub> CHO	75HAR/THY
1	3.1±0.3			EIAP	From CF <sub>3</sub> CHO	75HAR/THY
-420±42	2.0±0.4			EIAP	From C <sub>2</sub> F <sub>4</sub>	72LIF/GRA
	2.0±0.4			EIAP	From C <sub>2</sub> F <sub>4</sub>	70THY/MAC
C <sub>2</sub> F <sub>3</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -800 \pm 13$	
CF <sub>3</sub> CO					BDE(A-H)= 368±17	
> -707±29 <sup>a</sup>	< 0.6	> 1623±17 °		EIAP	From (CF <sub>3</sub> ) <sub>2</sub> CO	70HAR/THY
C <sub>2</sub> F <sub>3</sub> O <sub>2</sub>				-	$\Delta_f H(AH) = -1031 \pm 1$	77PED/RYL
CF <sub>3</sub> CO <sub>2</sub>					BDE(A-H) = 444±8	
• -1210±18 a	4.20±0.27	d 1351±17 g	1323±8	IMRE		78CUM/KEB
		1351±17 <sup>g</sup>	1324±8	IMRE		86TAF
C <sub>2</sub> F <sub>3</sub> O <sub>2</sub> -						
FCOCOF··F	•					
• -1170±31 <sup>c</sup>		191±8 g	155±8	IMRE		85LAR/MCM
C <sub>2</sub> F <sub>4</sub> N <sup>-</sup>						
CF <sub>3</sub> CN··F						
* -871±8 °		122±8 g	92±8	IMRE		85LAR/MCM
C <sub>2</sub> F <sub>5</sub>					$\Delta_f H(AH) = -1105 \pm 6$	82MCM/GOL
C <sub>2</sub> F <sub>5</sub>					BDE(A-H)= 430±2	82MCM/GOL
* -1067±23 <sup>a</sup>	1.8±0.2 d	1567±17 <sup>g</sup>	1535±13	IMRB	Between tBuO, F	76SUL/BEA
	2.2±0.3			EIAP	From n-C <sub>4</sub> F <sub>10</sub>	73HAR/THY2
	2.1±0.2			EIAP	From C <sub>3</sub> F <sub>8</sub>	72HAR/THY
	2.4			EIAP	From C <sub>2</sub> F <sub>6</sub>	69MAC/THY
	2.3			EIAP	From C <sub>3</sub> F <sub>8</sub>	69LIF/GRA
	> 3.3			EIAP	From C <sub>3</sub> F <sub>8</sub>	63BIB/CAR
	> 2.2±0.3			SI	<b>5</b> 0	69PAG/GOO
	2.220.0		1524±11	IMRB		76SUL/BEA
C <sub>2</sub> F <sub>5</sub> O <sup>-</sup>	<del> </del>					
CF <sub>3</sub> CF=O··F	7-					
• -1481±31 °		191±8 g	156±8	IMRE		85LAR/MCM
C <sub>2</sub> FeO <sub>2</sub>						
Fe(CO)2						
•	1.220±0.0	22		LPES		79ENG/LIN2
-256±25				NBAP	From Fe(CO) <sub>5</sub>	76COM/STO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		H <sub>acid</sub> (AH) <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> N <sup>-</sup>						
C <sub>2</sub> N <sup>-</sup>						
<290±19	> 2.3±0.2			EIAP	From CH <sub>3</sub> CN	71TSU/YOK
C <sub>2</sub> O <sup>-</sup>						
cco-						
* 8±11 b	1.848±0.027			LPES		83OAK/JON
< 339				IMRB	O <sup>-</sup> + cis-CHF=CHF→	79DAW/NOE
26±19				EIAP	From ketene	70COL/LOC
C <sub>2</sub> O <sub>3</sub> -						
$C_2O_3^-$				<b>57.</b> 5	m the data	72.000/0014
<b>-</b> 554				EIAP	From maleic anhydride	73COO/COM
C <sub>2</sub> O <sub>5</sub> -						
$co_2 \cdot \cdot co_3$						OVEREU EE
* -926±7 <sup>c</sup>		30	3±1	TDAs		80KEE/LEE
C <sub>2</sub> H <sup>-</sup>					$\Delta_f H(AH) = 228 \pm 1$	77PED RYL
HC≡C					BDE(A-H) = 552±8	85WOD/LEE
* 274±10 <sup>a</sup>	2.99±0.19 d	1576±10 g	1542±8	IMRE		79BAR/SCO
•	2.940±0.100			LPD	Adiabatic EA: 3.18±0.25 eV	79JAN/BRA
		1585±8	1546±8	TDEq		87MEO
	3.73±0.05			PD		70FEL
		1589±2		TDEq		86MEO/SIE
		1611±4 g	1577±3	IMRE		74ВОН/МАС
		1572±38		Endo		73HUG/LIF
						72BOH/LEE
	> 2.3±0.7			EIAP	From C <sub>2</sub> H <sub>4</sub>	71THY/MAC
	2.1±0.3			EIAP	From $C_2H_2$ , $C_2H_4$	70LOC/MOM
< 515±19				EIAP	From ketene	70COL/LOC
	> 2.8			EIAP	From C <sub>2</sub> H <sub>4</sub>	63TRE/NEU
	2.6			SI		69PAG/GOO
			1536±8	IMRE <sup>0</sup>	)	79BAR/SCO
C <sub>2</sub> HClF <sub>5</sub>						
CF <sub>3</sub> CF <sub>2</sub> H···C	a-				•	
* -1411±16		79±8 <sup>g</sup>	49±8	IMRE		84LAR/MCM2
C <sub>2</sub> HClF <sub>5</sub> O						
CF <sub>3</sub> OCF <sub>2</sub> H·	· C1 <sup>-</sup>					
*	<b>-</b> .		51±8	IMRE		84LAR/MCM
C-UCLENT						
CHCI-F. CN	<del>-</del>					
CHCl <sub>2</sub> F··CN • -281 <sup>c</sup>	1	74±15 <sup>g</sup>	44±10	IMRE		87LAR/MCM
					A 11/410 407 47	
$C_2HCl_2O_2^-$				Est2	$\Delta_f H(AH) = -427 \pm 17$	
CHCl2CO2					BDE(A-H)= 444±8	PA 07 11 / 11700
	3.96±0.20 <sup>d</sup>	1374±11 g	1347±8	IMRE		78CUM/KEB
−587±28 <sup>a</sup>	•	1369±11 <sup>g</sup>	1342±8	IMRE		81FUJ/MCI

Table 2. Negative Ion Table - Continued

	H <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
	$I_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{aff}(X \cdot \cdot Y^{-})$			
C <sub>2</sub> HCl <sub>3</sub> N <sup>-</sup>					
CHCl <sub>3</sub> ··CN <sup>-</sup>					
• -106±26 <sup>c</sup>	76±15 <sup>g</sup>	45±10	IMRE		87LAR/MCM
C <sub>2</sub> HCl <sub>3</sub> NO			Est	$\Delta_f H(AH) = -235 \pm 13$	
HN=C(CCI3)O				•	
* -329±23 <sup>a</sup>	1436±11 <sup>g</sup>	1406±8	IMRE		86TAF
C <sub>2</sub> HF					
FCH = C					
<b>-</b> 139			EIAP	$O^- + FCH = CH_2 \rightarrow$	76DAW/JEN
C <sub>2</sub> HFN <sup>-</sup>			-		
CHFCN					
•	1544±11 <sup>g</sup>	1513±8	IMRE		86TAF
C <sub>2</sub> HF <sub>2</sub> O <sub>2</sub> -			Est2	$\Delta_f H(AH) = -824 \pm 17$	
CHF <sub>2</sub> CO <sub>2</sub> -				BDE(A-H) = 444±8	
* -971±29 a 3.85±0.21 d	1384±12 g	1354±8	IMRE		78CUM/KEB
	1385±12 g	1355±8	IMRE		81FUJ/MCI
C <sub>2</sub> HF <sub>3</sub> N <sup>-</sup>					
CHF <sub>3</sub> ··CN <sup>⊤</sup>					
• -692±25 <sup>c</sup>	71±15 <sup>g</sup>	40±10	IMRE		87LAR/MCM
C <sub>2</sub> HF <sub>3</sub> NO <sup>-</sup>			Est	$\Delta_f H(AH) = -837 \pm 13$	
$HN = C(CF_3)O^-$					
* -928±23 <sup>a</sup>	1438±11 <sup>g</sup>	1409±8	IMRE		86TAF
C <sub>2</sub> HF <sub>4</sub> <sup>-</sup>					
$F_2C = CFH \cdot \cdot F$					
* -849±19 <sup>c</sup>	110±8 <sup>g</sup>	78±8	IMRE		83LAR/MCM
-841±36 <sup>c</sup>	102±25		IMRB		76SUL/BEA
C <sub>2</sub> HF <sub>6</sub>					
C <sub>2</sub> F <sub>5</sub> H··F					
* -1480±17 <sup>c</sup>	127±8 <sup>g</sup>	94±8	IMRE		83LAR/MCM
C <sub>2</sub> HF <sub>6</sub> O <sup>-</sup>					
CF3OCF2H··F					
•		113±8	IMRE		84LAR/MCM
C <sub>2</sub> HN <sup>-</sup>	-				
HCCNT.					
	1569±18 g	1539±13	IMRB	Between H <sub>2</sub> O <sub>2</sub> and mCl-toluene	87GRA/MEL
0.8±0.4			EIAP	From CH <sub>3</sub> CN	86HEN/ILL2
<422			IMRB	O <sup>-</sup> + CH <sub>3</sub> CN →	76DAW/JEN
309±19 > 1.1			EIAP	From CH <sub>3</sub> CN	71TSU/YOK

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> HNO <sup>-</sup> HCCNO <sup>-</sup> · 502				EIAP	From CH <sub>2</sub> = CHNO <sub>2</sub>	72SHI/YAM
C <sub>2</sub> HN <sub>2</sub> - HCN··CN-						
* 119±24 °		91±15 g	57±10	IMRE		87LAR/MCM
126±18 <sup>c</sup>		84±8		Est		84LAR/MCM3
C <sub>2</sub> HO					$\Delta_f H(AH) = -48\pm3$	77PEDIRYL
HC=CO				D-EA	BDE(A-H)= 441±9	
•	2.350±0.0			LPES		83OAK/JON
• -51±13 <sup>a</sup>		1527±11 g	1497±8	IMRE	Acid: ketene	83OAK/JON
<-54±19				EIAP	From ketene	70COL/LOC
C <sub>2</sub> H <sub>2</sub> -						
$H_2C = C^{-1}$	0.470±0.0	20		LPES		eant in /cmp
255±146	0.470±0.0.	20		IMRB		83BUR/STE 78DAW/NIB
255±146				IMRB	$O^- + C_2H_4 \rightarrow C_2H_2 + N_2O \rightarrow CH_2CN$	76DAW/NIB 76DAW/JEN
2331140	< 0.4			IMRB	5 1 52114 1, 52112 1 1125 1 E112E11	75LIN/ALB
C <sub>2</sub> D <sub>2</sub> -	····			<u>-</u>		
$D_2C = C^{-1}$						
•	0.490±0.02	20		LPES		83BUR/STE
C <sub>2</sub> H <sub>2</sub> BrO <sub>2</sub>				Est	$\Delta_f H(AH) = -395 \pm 6$	
BrCH <sub>2</sub> CO <sub>2</sub>					$BDE(A-H) = 444 \pm 8$	
* -528±19 <sup>a</sup>	3.71±0.22	d 1397±13 g	1370±8	IMRE		78CUM/KEB
C <sub>2</sub> H <sub>2</sub> ClF <sub>4</sub> O						
(CF <sub>2</sub> H) <sub>2</sub> O···	1		71±8	IMRE		84LAR/MCM
<u> </u>						
C <sub>2</sub> H <sub>2</sub> ClO <sub>2</sub> <sup>-</sup>					$\Delta_f H(AH) = -435 \pm 8$	77PED/RYL
CICH <sub>2</sub> CO <sub>2</sub>		d			BDE(A-H) = 444±8	
* -558±21 <sup>a</sup>	3.61±0.21		1376±8	IMRE		78CUM/KEB
		1407±12 g	1376±8	IMRE		81FUJ/MCI
C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub> N <sup>-</sup>						
CH <sub>2</sub> Cl <sub>2</sub> ··CN	-			<b></b>		
• -90±24 <sup>c</sup>		68±15 <sup>g</sup>	38±10	IMRE		87LAR/MCM
C <sub>2</sub> H <sub>2</sub> FO <sup>-</sup> CH <sub>2</sub> =CFO <sup>-</sup>					$\Delta_f H(AH) = -444 \pm 3$ $BDE(A-H) = 406 \pm 8$	77PED/RYL
• -484±20 a	2.4±0.3 d	148±8 k	1460±15	IMRB	Between McCOCH <sub>2</sub> F, cyclopentadiene	80FAR/MCM
•	2.22±0.09	- · - <del>-</del>		PD		77ZIM/REE
		148±8 <sup>g</sup>	115±8	IMRE		83LAR/MCM
			1459±13	IMRB <sup>0</sup>		80FAR/MCM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> H <sub>2</sub> FO <sub>2</sub>		ari.	an.	Est2	$\Delta_f H(AH) = -586 \pm 8$	
FCH <sub>2</sub> CO <sub>2</sub>				Lie	BDE(A-H) = 444±8	
	3.52±0.21 <sup>d</sup>	1416±12 <sup>g</sup>	1385±8	IMRE		78CUM/KEB
		1418±12 g	1386±8	IMRE		81FUJ/MCI
$C_2H_2F_2O_2P^-$						
$C_2H_2F_2O_2P^-$						
<-1125				IMRB	CH <sub>2</sub> =CHO <sup>-</sup> + PF <sub>3</sub> O →	78SUL/BEA
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> -						
$CF_2 = CH_2 \cdot \cdot 1$	F.	112±21 <sup>k</sup>		n (nn		#401 IT 1017 A
-697±17		112±21 **		IMRB		76SUL/BEA
$C_2H_2F_3O^-$					$\Delta_f H(AH) = -888 \pm 5$	77PED RYL
CF <sub>3</sub> CH <sub>2</sub> O	_				BDE(A-H) = 436±4	
• -904±20 <sup>a</sup>	2.42±0.20 <sup>d</sup>	1514±15 g	1482±8	IMRE		79BAR/SCO
			1493±8	IMRE	· · · · · · · · · · · · · · · · · · ·	79BAR/SCO
$C_2H_2F_3O_2S^-$						
CF <sub>3</sub> SO <sub>2</sub> CH <sub>2</sub>						
*		1452±11 <sup>g</sup>	1422±8	IMRE		86TAF
$C_2H_2F_3O_3^-$						
HOH · CF <sub>3</sub> C	o <sub>2</sub> -					
-1509 <sup>c</sup>		57±4	27±7	TDAs		86MEO/SIE2
C <sub>2</sub> H <sub>2</sub> F <sub>5</sub> O <sup>-</sup>						
$(CHF_2)_2O\cdots F$	<del>-</del>					
•		151±8 <sup>g</sup>	117±8	IMRE		83LAR/MCM
C <sub>2</sub> H <sub>2</sub> N <sup>-</sup>		***			$\Delta_f H(AH) = 75\pm 1$	83AN/MAN
CH <sub>2</sub> CN					$BDE(A-H) = 389 \pm 10$	82MCM/GOL
* 105±12 <sup>a</sup>	1.46±0.22 <sup>đ</sup>	1560±11 <sup>g</sup>	1528±8	IMRE		79BAR/SCO
•	1.543±0.014	_		LPES		87MOR/ELL3
		1562±11 <sup>g</sup>	1530±8	IMRE		78CUM/KEB
	1.507±0.018	1556±12 e	1523±15 <sup>h</sup>	LPD		77ZIM/BRA
	1.560±0.006			LPD		86MAR/WET
20.12	. 4 4 4 5	1534±19		EIAP	From CH <sub>3</sub> CN	86HEN/ILL2
20±19	> 1.6±0.2			EIAP	From CH <sub>3</sub> CN, EtCN	71TSU/YOK
			1525±8	IMREO		79BAR/SCO
C <sub>2</sub> H <sub>2</sub> N <sup>-</sup> CH <sub>2</sub> NC <sup>-</sup>					$\Delta_f H(AH) = 173 \pm 1$	77BAG/COL
-	1.059±0.024			LPES		87MOR/ELL2
C <sub>2</sub> D <sub>2</sub> N <sup>-</sup> CD <sub>2</sub> CN <sup>-</sup>	- Control					
0220	1.538±0.012			LPES		87MOR/ELL3

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> D <sub>2</sub> N <sup>-</sup> CD <sub>2</sub> NC <sup>-</sup>						
	1.070±0.0	024		LPES		87MOR/ELL2
C <sub>2</sub> H <sub>2</sub> NO <sub>2</sub> - H <sub>2</sub> C=C=NO	2					
		1515±19 <1563±3 <sup>g</sup>	<1531	EIAP IMRB	From CH <sub>2</sub> = CHNO <sub>2</sub>	72SHI/YAM 80BAR
C <sub>2</sub> H <sub>2</sub> O <sub>2</sub> -						
O = CH-CH = -272±25	0			NBAP	$\Delta_f H(A) = -212\pm 1$ From ethylene carbonate	77PED/RYL 83COM/REI
C <sub>2</sub> H <sub>3</sub> -					$\Delta_f H(AH) = 52$ $BDE(A-H) = 460 \pm 8$	77PED RYL 82MCM GOL
* 221±9 a	0.8±0.2 d	1699		Bran		84DEP/BIE
	> 0.4		> 1661	IMRB IMRB		75LIN/ALB 86FRO/FRE
C <sub>2</sub> H <sub>3</sub> BrN <sup>-</sup> MeCN··Br <sup>-</sup>						
* -192±10 <sup>c</sup>		54±8	33±8	TDAs		72YAM/KEB
C <sub>2</sub> H <sub>3</sub> ClF <sub>3</sub> <sup>-</sup> CF <sub>2</sub> HCH <sub>2</sub> F···	Cl <sup>-</sup>					
* -1055±18 °		79±8 g	59±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>3</sub> CIF <sub>3</sub> O <sup>-</sup> CF <sub>3</sub> CH <sub>2</sub> OH··	CI <sup>-</sup>					
* -1216±15 °		100±8 g	69±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>3</sub> CIN <sup>-</sup> MeCN··CI <sup>-</sup>						W
* -208±10 <sup>c</sup>		56±8	38±8	TDAs		72YAM/KEB
		57±8 44±8 <sup>g</sup>	37±11 19±8	TDAs IMRE	-	86YAM/FUR 84LAR/MCM2
C <sub>2</sub> H <sub>3</sub> Cl <sub>2</sub> O <sub>2</sub> - CICO <sub>2</sub> Me··CI	-					the transfer of the transfer o
•		59±8 g	33±8	IMRE		85LAR/MCM
C <sub>2</sub> H <sub>3</sub> FN <sup>-</sup> MeCN··F						
* -240±11 <sup>c</sup>		67±8	50±8	TDAs		72YAM/KEB
$C_2H_3F_2^-$ CHF=CH <sub>2</sub> ···	₹	• • • • • • • • • • • • • • • • • • • •		.,		,
-453±27 c		65±17		IMRB		76SUL/BEA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$		ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\mathbf{Y})$	) eV <u>/</u>	$H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{aff}(X \cdot \cdot Y^{-})$			
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> O <sup>-</sup> F <sub>2</sub> CHCH <sub>2</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -620 \pm 4$ $BDE(A-H) = 436 \pm 4$	
	2.23±0.17 d	1533±12 g	1503±8	IMRE	DD2(A 1) - 40014	79BAR/SCO
			1505±8	IMRE	•	79BAR/SCO
		<del></del>				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
C <sub>2</sub> H <sub>3</sub> F <sub>4</sub> <sup>-</sup>	<del></del>					
CF <sub>2</sub> HCH <sub>2</sub> F -1108±19 C		111±8 g	79±8	TA (D) 77		007 4 70 70 600 6
-1100±17		111100	/9±0	IMRE		83LAR/MCM
C <sub>2</sub> H <sub>3</sub> F <sub>4</sub> O <sup>-</sup>						
CF <sub>3</sub> CH <sub>2</sub> OH⋅		_				
* -1300±16 °		164±8 <sup>g</sup>	130±8	IMRE		83LAR/MCM
C <sub>2</sub> H <sub>3</sub> IN						
McCN·IT						
* -163±10 <sup>c</sup>		50±8	27±8	TDAs	-	72YAM/KEB
C <sub>2</sub> H <sub>3</sub> NO <sub>2</sub> -						
CH <sub>2</sub> = CHNO	2					
	>1.6			IMRB		80BAR
C <sub>2</sub> H <sub>3</sub> NO <sub>2</sub> -	*					
$MeCN \cdot O_2^{-1}$						
* -36±6 c		69±4	47±4	TDAs		73YAM/PAY
C <sub>2</sub> H <sub>3</sub> O <sup>-</sup>			- <u> </u>		A L/AUI 100	T7070/0V
CH <sub>2</sub> = CHO					$\Delta_f H(AH) = -166$ $BDE(A-H) = 394 \pm 15$	77PED/RYL
* -165±13 a		1531±12 g	1502±8	IMRE	552(1.17) - 554176	79BAR/SCO
•	1.817±0.023			LPES		82ELL/ENG
		1533±12 g	1505±8	IMRE		78CUM/KEB
	1.81±0.06			PD		77ZIM/REE
			1505±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>2</sub> H <sub>3</sub> O <sup>-</sup>					$\Delta_f H(AH) = -166$	77PED/RYL
CH <sub>3</sub> CO <sup>-</sup>					$BDE(A-H) = 360\pm3$	82MCM/GOL
• -60±11 a	0.4±0.1 <sup>d</sup>	1636±11 g	1604±8	IMRB		85DEP/BIE
C <sub>2</sub> D <sub>3</sub> O <sup>-</sup>						
$CD_2 = CDO^-$						
•	1.817±0.029			LPES		82ELL/ENG
C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup>					$\Delta_f H(AH) = -356 \pm 1$	77 <i>DECLOVI</i>
HCO <sub>2</sub> CH <sub>2</sub>					Zf1(Art)= -330±1	77PED/RYL
-249±20 a		1637±19 g	1607±17	IMRB		85DEP/GRA
CaHaOa-			·		A 1//A/D- 400	
C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup> McCO <sub>2</sub> <sup>-</sup>					∆ <sub>f</sub> H(AH)=   −432 BDE(A−H)=    443±8	78CHAIZWO
* -504±13 a	3.07±0.21 d	1459±12 g	1429±8	IMRE -	<i>□□□□</i> ( <i>□</i> =□)	<i>82MCM/GOL</i> 78CUM/KEB
		1457±12 g	1427±8	IMRE		86TAF
		1459±12 g	1430±8	IMRE		81FUJ/MCI
	3.36±0.05	-		ECD		68WEN/CHE

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Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> H <sub>3</sub> O <sub>4</sub> <sup>-</sup> HCO <sub>2</sub> H··HCO <sub>2</sub> <sup>-</sup> -997±17 °	154±4	105±7	TDAs		86MEO/SIE2
C <sub>2</sub> H <sub>3</sub> Si <sup>-</sup> H <sub>3</sub> SiC≖C <sup>-</sup> <322			IMRB	HC≡C¯ + SiH <sub>4</sub> →	76PAY/TAN
C <sub>2</sub> H <sub>4</sub> B <sub>3</sub> <sup>-</sup> 1,5-C <sub>2</sub> B <sub>3</sub> H <sub>4</sub> <sup>-</sup>	<1795		EIAP	From closo-1,5-C <sub>2</sub> B <sub>3</sub> H <sub>5</sub>	73ONA/HOW
C <sub>2</sub> H <sub>4</sub> ClF <sub>2</sub> <sup>-</sup> McCHF <sub>2</sub> ··Cl <sup>-</sup> • -787±18 °	62±8 <sup>g</sup>	34±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>4</sub> ClF <sub>3</sub> N <sup>-</sup> CF <sub>3</sub> CH <sub>2</sub> NH <sub>2</sub> ··Cl <sup>-</sup> • -1004±14 °	75±8 <sup>g</sup>	45±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>4</sub> ClO <sup>-</sup> MeCHO··Cl <sup>-</sup> * -453±10 °	60±8 <sup>g</sup>	33±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>4</sub> ClO <sub>2</sub> <sup>-</sup> McCO <sub>2</sub> H··Cl <sup>-</sup> • -750±10 °	90±8 100±8 <sup>g</sup>	66±8 70±8	TDAs IMRE		71YAM/KEB 84LAR/MCM2
C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub> Si <sup>-</sup> HCSiMeCl <sub>2</sub> <sup>-</sup> · 343±21			EIAP	From Me <sub>2</sub> SiCl <sub>2</sub>	68JAE/HEN
$C_2H_4F^ CH_2 = CH_2 \cdot F^ -221\pm15$ c	25±13		IMRB	Structure: 85RQY/MCM	76SUL/BEA
C <sub>2</sub> H <sub>4</sub> FO <sup>-</sup> FCH <sub>2</sub> CH <sub>2</sub> O <sup>-</sup> -399±25 <sup>a</sup> 2.1±0.2 <sup>d</sup>	1548±16 g	1521±15 1527±14 1520±17	Est IMRB IMRB IMRB <sup>C</sup>	$\Delta_f H(AH) = -417\pm 8$ $BDE(A-H) = 436\pm 4$ Between HF, acetone	80CLA/MCM 77DAW/JEN 80CLA/MCM
C <sub>2</sub> H <sub>4</sub> FO <sub>2</sub> <sup>-</sup> McCO <sub>2</sub> H··F <sup>-</sup> • -865±11 c	185±8 <sup>g</sup>	153±8	IMRE		83LAR/MCM
C <sub>2</sub> H <sub>4</sub> F <sub>4</sub> N <sup>-</sup> CF <sub>3</sub> CH <sub>2</sub> NH <sub>2</sub> ··F <sup>-</sup> • -1067±19 c	118±8 <sup>g</sup>	85±8	IMRE		83LAR/MCM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Υ⁻)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>2</sub> H <sub>4</sub> IO <sub>2</sub> -					
MeCO <sub>2</sub> H··I <sup>™</sup>					
* -691±5 °	71±4	44±9	TDAs		84CAL/KEB
C <sub>2</sub> H <sub>4</sub> N <sup>-</sup>				$\Delta_f H(AH) = 71 \pm 8$	69BEN/CRU
$CH_2 = NCH_2^-$				•	
151±32 <sup>a</sup> 0.8±0.3	1610±23 g	1582±21	IMRB	EA: between cyclooctatetraene, SO <sub>2</sub>	85KAS/DEP
C <sub>2</sub> H <sub>4</sub> NO <sup>-</sup>				$\Delta_f H(AH) = -238 \pm 1$	77PED/RYL
$HN = C(Me)O^{-}$	_			·	
• -339±12 <sup>a</sup>	1429±11 g	1400±8	IMRE		86TAF
C <sub>2</sub> H <sub>4</sub> NO <sup>-</sup>				$\Delta_f H(AH) = -20 \pm 8$	69BEN/CRU
MeCH = NO				•	
• -20±21 <sup>a</sup>	1530±12 g	1500±8	IMRE		79BAR/SCO
		1503±8	IMRE		79BAR/SCO
C <sub>2</sub> H <sub>4</sub> NO <sup>-</sup>			Est2	$\Delta_f H(AH) = -787 \pm 4$	
MeN = CHO				•	
* -809±15 <sup>a</sup>	1508±11 g	1479±8	IMRE		86TAF
C <sub>2</sub> H <sub>4</sub> NO <sup>-</sup>					
MeOH · · CNT					
* -196±24 <sup>c</sup>	69±15 g	38±10	IMRE		87LAR/MCN
C <sub>2</sub> H <sub>4</sub> NO <sub>2</sub> -				$\Delta_f H(AH) = -391 \pm 5$	77NGA/SAB
H <sub>2</sub> NCH <sub>2</sub> CO <sub>2</sub>				$BDE(A-H) = 444\pm8$	
• -488±15 <sup>a</sup> 3.35±0.19 <sup>d</sup>	1433±10 g	1404±8	IMRE		83LOC/MCI
C <sub>2</sub> H <sub>4</sub> NO <sub>2</sub> -			Est	$\Delta_f H(AH) = -417 \pm 4$	
$HN = C(OMe)O^{-}$					
• -433±15 <sup>a</sup>	1514±11 <sup>g</sup>	1485±8	IMRE		86TAF
C <sub>2</sub> H <sub>4</sub> NO <sub>2</sub> -				$\Delta_f H(AH) = -102$	77PED/RYL
$MeCH = NO_2^-$	_			•	
* -143±13 <sup>a</sup>	1490±12 g	1462±8	IMRE		79BAR/SCO
	1496±12 g	1469±8	IMRE		78CUM/KEB
		1472±8	IMREO		79BAR/SCO
C <sub>2</sub> H <sub>5</sub> <sup>-</sup>				$\Delta_f H(AH) = -84$	74SCO
MeCH <sub>2</sub>				$BDE(A-H) = 421\pm2$	86BRO/LIG
* 147±9 <sup>a</sup>	1761±8	1725±10 <sup>h</sup>	Bran	•	84DEP/BIE
1.0			SI		72PAG
0.9			SI		69PAG/GOO
C <sub>2</sub> H <sub>5</sub> B <sub>4</sub> <sup>-</sup>					
1,2-C <sub>2</sub> B <sub>4</sub> H <sub>5</sub>	-1400 00			w	
	<1409±29		EIAP	From closo-1,2-C <sub>2</sub> B <sub>4</sub> H <sub>6</sub>	73ONA/HOW

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$	EA(A)	ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$		$\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{aff}(X \cdots Y')$		Go.m.i.d.i.	
C <sub>2</sub> H <sub>5</sub> B <sub>4</sub>						
1,6-C <sub>2</sub> B <sub>4</sub> H <sub>5</sub>		< 1891		EIAP	From closo-1,6-C <sub>2</sub> B <sub>4</sub> H <sub>6</sub>	73ONA/HOW
$C_2H_5Br_2^-$						***************************************
EtBr··Br <sup>-</sup> * -324 <sup>c</sup>		49	25	TDAs		74DOU
		•	<u>~</u>	1023		74000
C <sub>2</sub> H <sub>5</sub> ClFO <sup>-</sup> FCH <sub>2</sub> CH <sub>2</sub> OH	t⊷Cl <sup>±</sup>					
* -730±18 °		86±8 <sup>g</sup>	54±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>5</sub> Cl <sub>2</sub>						
EtCl··Cl <sup>-</sup> -400±20 <sup>c</sup>		61.10		Man	Auchandi OAT AD OATO	manu (manu
		61±19		IMRB	Anchored: 84LAR/MCM	73RIV/BRE
C2H5Cl2O	шСI <sup>—</sup>					
CICH <sub>2</sub> CH <sub>2</sub> OI * -579±14 <sup>c</sup>	ii. ··Ci	90±8 g	59±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>5</sub> F <sub>2</sub> O <sup>-</sup>	· · · · · · · · · · · · · · · · · · ·					
FCH <sub>2</sub> CH <sub>2</sub> OH	··F					
* -811±19 °		146±8 g	113±8	IMRE		83LAR/MCM
C <sub>2</sub> H <sub>5</sub> N <sup>-</sup>						
EtN <sup>-</sup> ·	1.9±0.2			PD		74RIC/STE2
C <sub>2</sub> H <sub>5</sub> N <sub>2</sub> O <sup>-</sup>	· · · · · · · · · · · · · · · · · · ·			Est2	$\Delta_f H(AH) = 49 \pm 8$	
MeN(NO)CH	_			LSIZ	Africary 49±0	
* 113±19 <sup>a</sup>		1594±11 <sup>g</sup>	1564±8	IMRE		8SING/NIB3
			1567±8	IMREO		85ING/NIB3
C <sub>2</sub> H <sub>5</sub> O <sup>-</sup>					$\Delta_f H(AH) = -235$	77PED/RYL
EtO-		d 4550 40 0			$BDE(A-H) = 436\pm4$	82MCM/GOL
• -186±10 <sup>a</sup>		_	1551±8	IMRE		79BAR/SCO
	1.726±0.00 1.7±0.1	33 130230		LPES	E E-ONO	82ELL/ENG
	> 1.7±0.1				From EtONO	68WIL/HAM
	0.6			EIAP SI	From EtOH	63TRE/NEU
	0.0		1546±8	IMRE <sup>0</sup>		69PAG/GOO 79BAR/SCO
C <sub>2</sub> H <sub>5</sub> O <sup>-</sup>	······································				$\Delta_f H(AH) = -184$	77PED/RYL
McOCH <sub>2</sub>					BDE(A-H) = 389±4	82MCM/GOL
* -11±9 a		1703±8	1666±12 <sup>h</sup>	Bran		84DEP/BIE
C <sub>2</sub> D <sub>5</sub> O <sup>-</sup>						
CD <sub>3</sub> CD <sub>2</sub> O	1 700 : 0 0	20				
-	1.702±0.03	33		LPES		82ELL/ENG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
C <sub>2</sub> H <sub>5</sub> OS	· · · · · · · · · · · · · · · · · · ·				$\Delta_f H(AH) = -151 \pm 1$	77PED/RYL
MeSOCH2		_				
• -119±10 a		1563±10 g	1533±8	IMRE		79BAR/SCO
		1566±10 g	1536±8	IMRE		78CUM/KEB
			1530±8	IMRE	)	79BAR/SCO
C2H5O2S- MeSO2CH2-					$\Delta_f H(AH) = -373\pm3$	77PED/RYL
• -373±15 a		1531±12 g	1499±8	IMRE		79BAR/SCO
-370±15 a		1533±12 g	1502±8	IMRE		78CUM/KEB
			1502±8	IMRE		79BAR/SCO
C <sub>2</sub> H <sub>5</sub> O <sub>3</sub> <sup>-</sup> нон…месс	92					and the second s
* -813 °		67±4	39±7	TDAs	-	86MEO/SIE2
С <sub>2</sub> Н <sub>5</sub> О <sub>3</sub> <sup>-</sup> меОн · · нСС	 92					
• -740±17 <sup>c</sup>		74±4	44±7	TDAs		86MEO/SIE2
C <sub>2</sub> H <sub>5</sub> S <sup>-</sup>	-			3 11	$\Delta_1 H(AH) = -46$ $BDE(A-H) = 364 \pm 9$	77PED/RYL
• -90±13 a	1.97±0.22	2 d 1486±12 g	1460±8	IMRE		79BAR/SCO
•	1.953±0.0			LPD		80JAN/REE
	1.6			SI		69PAG/GOO
			1469±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>2</sub> H <sub>5</sub> S <sup>-</sup> MeSCH <sub>2</sub> <sup>-</sup>		1-2-2		***	$\Delta_f H(AH) = -38$	77PED/RYL
* 77±11 a		1645±11 g	1615±8	IMRE		85ING/NIB
C <sub>2</sub> H <sub>5</sub> Si <sup>-</sup> MeSiCH <sub>2</sub> <sup>-</sup>					$\Delta_f H(AH) = 92\pm 8$	86WAL
155±32 <sup>a</sup>		1593±23 g	1565±21	IMRB		86DAM/DEP
C2H6BF2- Mc2BF··F						
–773 <sup>c</sup>		259	F <sup>-</sup> A: Et <sub>3</sub> B > M	IMRB Ic <sub>2</sub> BF > N	MeSiF <sub>3</sub> > Me <sub>3</sub> B > SF <sub>4</sub>	77MUR/BEA2
C <sub>2</sub> H <sub>6</sub> BF <sub>2</sub> O <sub>2</sub> - (MeO) <sub>2</sub> BF··F						
•		218±21 g	190±21	IMRE		85LAR/MCM
C <sub>2</sub> H <sub>6</sub> B <sub>5</sub> <sup>-</sup> 2,4-C <sub>2</sub> B <sub>5</sub> H <sub>6</sub> <sup>-</sup>						
-,. 5255116		< 1891		EIAP	From closo-2,4-C <sub>2</sub> B <sub>4</sub> H <sub>7</sub>	73ONA/HOW
C <sub>2</sub> H <sub>6</sub> BrOS				<del> </del>		
Me <sub>2</sub> SO ·· Br <sup>-</sup> * -437±6 <sup>c</sup>		72±4	46±9	TDAs		84MAG/CAL

Table 2. Negative Ion Table - Continued

	<del></del>	Table	2. Incgative io	ii Tabic	- Continueu	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) ) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
C <sub>2</sub> H <sub>6</sub> ClO						
EtOH · · CIT						
* -535±10 <sup>c</sup>	:	72±8 <sup>g</sup>	44±8	IMRE		84LAR/MCM2
C <sub>2</sub> H <sub>6</sub> ClOS						
Me <sub>2</sub> SO··CI	•					
* -457±6 °		78±4	52±9	TDAs		84MAG/CAL
C <sub>2</sub> H <sub>6</sub> ClSi <sup>-</sup>						
Me <sub>2</sub> SiCI						
67±21				EIAP	From Me <sub>2</sub> SiCl <sub>2</sub>	68JAE/HEN
C <sub>2</sub> H <sub>6</sub> FO		·- h				
EtOH··F						
* -615±11 <sup>c</sup>		132±8 <sup>g</sup>	101±8	IMRE		83LAR/MCM
C <sub>2</sub> H <sub>6</sub> F <sub>3</sub> Si <sup>-</sup>						
Me <sub>2</sub> SiF <sub>2</sub> ··F	•					
2 2		232±21		IMRB	$F^-A: SP_4 < Me_2SiF_2 < Me_3B$	77MUR/BEA3
C <sub>2</sub> H <sub>6</sub> IO <sup>-</sup>				- · · · · · · · · · · · · · · · · · · ·		
EtOH··I						
* -474±5 °		51±4	27±9	TDAs		84CAL/KEB
C <sub>2</sub> H <sub>6</sub> IOS <sup>-</sup>				···· ·		
Mc <sub>2</sub> SO··I						
• -405±6 c		66±4	38±9	TDAs		84MAG/CAL
C <sub>2</sub> H <sub>6</sub> N <sup>-</sup>					$\Delta_f H(AH) = -48 \pm 1$	77PED/RYL
EtNH					$BDE(A-H) = 423\pm13$	83MCM/GOL
* 93±8 <sup>a</sup>	0.66±0.20	d 1671±7 g	1639±3	IMRE		76MAC/HEM
C <sub>2</sub> H <sub>6</sub> N <sup>-</sup>					$\Delta_f H(AH) = -18$	77PED/RYL
Me <sub>2</sub> N					BDE(A-H)= 383±8	82MCMIGOL
* 109±7 a	0.39±0.15	d 1658±6 g	1628±3	IMRE		76MAC/HEM
	1.0			SI		69PAG/GOO
C <sub>2</sub> H <sub>6</sub> O <sub>4</sub> P <sup>-</sup>				Est2	$\Delta_f H(AH) = -1017 \pm 63$	
(McO) <sub>2</sub> PO <sub>2</sub>						
-1084±149	a	1463±86 g	1435±84	IMRB		80HOD/SUL
C <sub>2</sub> H <sub>7</sub> O <sub>2</sub>						
MeOH··MeO	)-					
-461±11 <sup>c</sup>		120±1	87±2	TDAs		86MEO/SIE
-432±18 <sup>c</sup>		91±8	64±7	TDAs		84CAL/ROZ
			The difference b	etween 84	CAL/ROZ and 86MEO/SIE2 has not been resolved.	
C <sub>3</sub> -			· · · · · · · · · · · · · · · · · · ·			
°C₃¯						
•	1.981±0.0	20		LPES	From propene discharge	86OAK/ELL
	2.5±1.0			EIAP	From graphite	54HON

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>3</sub> CIF <sub>6</sub> O						
(CF <sub>3</sub> ) <sub>2</sub> CO··						
• -1720±30 °		96±8 g	68±8	IMRE		85LAR/MCM
C <sub>3</sub> F <sub>3</sub> -						
C <sub>3</sub> F <sub>3</sub> -						
-425				EIAP	From $CF_2 = CF - CF = CF_2$	79SAU/CHR
<del>-94</del> 1				EIAP	From CF <sub>3</sub> CF = CF <sub>2</sub>	72HAR/THY
C <sub>3</sub> F <sub>3</sub> -					$\Delta_f H(AH) = -414 \pm 13$	86SMA
CF <sub>3</sub> C≡C					BDE(A-H)= 552±21	
• -458±21 a	3.92±0.31	d <sub>1486±</sub> 9 g	1454±8	IMRE		86TAF
	< 5.6			EIAP	From CF <sub>3</sub> C≅CCF <sub>3</sub>	79SAU/CHR
C <sub>3</sub> F <sub>4</sub> O <sup>-</sup>						
CF <sub>3</sub> CFCO					•	
-926±58				EIAP	From CF <sub>3</sub> CF <sub>2</sub> CHO	75HAR/THY
C <sub>3</sub> F <sub>5</sub>			- Santa			
C <sub>3</sub> F <sub>5</sub>						
	2.7±0.2			EIAP	From c-C <sub>4</sub> F <sub>8</sub>	72HAR/THY2
-1052	3.0			EIAP	From c-C <sub>4</sub> F <sub>8</sub> , 2-C <sub>4</sub> F <sub>8</sub>	79SAU/CHR
	> 2.7±0.2			EIAP	From $CF_3CF = CF_2$	72THY
-950±38	2.6±0.4			EIAP	From $CF_3CF = CF_2$	72LIF/GRA
	2.7±0.1			EIAP	From CF <sub>3</sub> CF = CF <sub>2</sub>	72HAR/THY
C <sub>3</sub> F <sub>5</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -1201 \pm 21$	
$CF_2 = C(CF_3)$	o <del>-</del>				, , ,	
• -1318±42 a		1413±21 g	1384±17	IMRB	Between FCH2CO2H, HCl; nearer to HCl	80FAR/MCM
	2.1±0.3			EIAP	From (CF <sub>3</sub> ) <sub>2</sub> CO	70HAR/THY
			1356±10	IMRB <sup>0</sup>		80FAR/MCM
C <sub>3</sub> F <sub>6</sub> -						
(CF <sub>3</sub> ) <sub>2</sub> C <sup></sup>						
* -1181±17 a		1527±17 g	1498±17	IMRB		84MCD/CHO
	0.6			EIAP	From (CF <sub>3</sub> ) <sub>2</sub> CO	70HAR/THY
C <sub>3</sub> F <sub>6</sub> N <sup>-</sup>						
CF <sub>3</sub> CF <sub>2</sub> CN··	F			1		
•		126±8 <sup>g</sup>	97±8	IMRE		83LAR/MCM
C <sub>3</sub> F <sub>7</sub> <sup>-</sup>						
(CF <sub>3</sub> ) <sub>2</sub> CF						
	> 2.7±0.2			EIAP	From i-C <sub>5</sub> F <sub>12</sub>	85SPY/HUN
	> 2.6±0.2			EIAP	From i-C <sub>4</sub> F <sub>10</sub>	83SPY/SAU
C <sub>3</sub> F <sub>7</sub>						
C <sub>3</sub> F <sub>7</sub>					$\Delta_f H(A) = -1337 \pm 23$	83EVA/WEE
<i>J</i> ,	> 3.4±0.3			EIAP	From neo-C <sub>5</sub> F <sub>12</sub>	85SPY/HUN
	> 2.7±0.2			EIAP	From i-C <sub>5</sub> F <sub>12</sub>	85SPY/HUN
	> 2.6±0.1					85SPY/HUN
	> 2.0±0.1			EIAP	From i-C <sub>4</sub> F <sub>10</sub>	6531 1/11OIN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>3</sub> F <sub>7</sub> <sup>-</sup>						
C <sub>3</sub> F <sub>7</sub> -					$\Delta_f H(A) = -1337 \pm 23$	83EVA/WEE
	> 2.8±0.1			EIAP	From n-C <sub>6</sub> F <sub>14</sub>	83SPY/SAU
	$> 2.6 \pm 0.1$			EIAP	From n-C <sub>5</sub> F <sub>12</sub>	83SPY/SAU
	$> 2.5 \pm 0.4$			EIAP	From n-C <sub>4</sub> F <sub>10</sub>	83SPY/SAU
	> 2.2±0.2			EIAP	From n-C <sub>4</sub> F <sub>10</sub>	73HAR/THY2
-1582±7	> 2.3±0.2			EIAP	From C <sub>3</sub> F <sub>8</sub>	72HAR/THY
	> 2.4			EIAP	From C <sub>3</sub> F <sub>8</sub>	69LIF/GRA
C <sub>3</sub> F <sub>7</sub> O <sup>-</sup>	······································					
(CF <sub>3</sub> ) <sub>2</sub> CO··F	,-					
* -1854±31 °		208±8 <sup>g</sup>	174±8	IMRE		85LAR/MCM
C <sub>3</sub> F <sub>7</sub> O <sup>-</sup>						
CF <sub>3</sub> CF <sub>2</sub> CFO						
* -1919±31 <sup>c</sup>		197±8 <sup>g</sup>	162±8	IMRE		85LAR/MCM
C <sub>3</sub> FeO <sub>3</sub> -						
Fe(CO) <sub>3</sub>						
*	1.800±0.20	00		LPES		79ENG/LIN2
<-950				NBAP	From Fe(CO) <sub>5</sub>	76COM/STO
C <sub>3</sub> N <sup>-</sup>					$\Delta_f H(AH) = 351$	85HAR
N=CC=C		•			$BDE(A-H) = 552 \pm 21$	
289 <sup>a</sup>	4.11±0.32	d 1468±10	1438±10	TDEq		87MEO
-365±19				EIAP	From $CH_2 = CHCN$	86HEN/ILL2
-512±21				EIAP	From TCNE	72BRI/OLS
	2.4			EIAP	From EtCN	71TSU/YOK
318±29	2.4			EIAP	From HC=C-C=N	61DIB/REE
C <sub>3</sub> O-	,					
C <sub>3</sub> O <sup></sup>						
	1.340±0.15	0		LPES	Large geometry change on detachment	86OAK/ELL
C <sub>3</sub> O <sub>2</sub> -						
$c_3 o_2^-$					•	
	0.850±0.15	0		LPES		86OAK/ELL
С <sub>3</sub> н-						
нс <sub>3</sub> -						
	1.858±0.02	7		LPES	From propene discharge	86OAK/ELL
C <sub>3</sub> HCIF <sub>5</sub> O <sup>-</sup>						
CF <sub>3</sub> COCF <sub>2</sub> H⋅	·Cl¯					
* -1428 <sup>c</sup>			68±8	IMRE		84LAR/MCM
C <sub>3</sub> HCrO <sub>3</sub> -						
(CO) <sub>3</sub> CrH <sup>-</sup>						
<-287				<b>IMRB</b>		85LAN/SQU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
$C_3HF_3^ CF_3CH=C^-$					
-614			EIAP	$O^- + CF_3CH = CH_2 \rightarrow$	76DAW/JEN
C <sub>3</sub> HF <sub>4</sub> O <sup>-</sup> CF <sub>2</sub> =C(CHF <sub>2</sub> )O <sup>-</sup>			Est	$\Delta_f H(AH) = -971 \pm 17$	
• -1071±44 <sup>a</sup>	1430±27 g	1401±23 1400±25	IMRB IMRB <sup>C</sup>	Between HCO <sub>2</sub> H, FCH <sub>2</sub> CO <sub>2</sub> H	80FAR/MCM 80FAR/MCM
C <sub>3</sub> HF <sub>5</sub> NO <sup>-</sup> CF <sub>3</sub> OCF <sub>2</sub> H···CN <sup>-</sup>					
*	78±15 g	47±10	IMRE		87LAR/MCM
C <sub>3</sub> HF <sub>6</sub> <sup>-</sup> (CF <sub>3</sub> ) <sub>2</sub> CH <sup>-</sup>				$\Delta_f H(AH) = -1406 \pm 8$ $BDE(A-H) = 452 \pm 33$	86KOUKOZ 84MCD/CHO
• -1414±29 <sup>a</sup> 2.5±0.6 <sup>d</sup>	1522±21 <sup>g</sup>	1490±17	IMRB	•	84MCD/CHO
C <sub>3</sub> HF <sub>6</sub> O <sup>-</sup> (CF <sub>3</sub> ) <sub>2</sub> CHO <sup>-</sup>			Est	$\Delta_f H(AH) = -1536 \pm 8$ $BDE(A-H) = 438 \pm 4$	
• -1623±19 <sup>a</sup> 3.19±0.16 <sup>d</sup>	1443±11 g	1415±8 1424	IMRE IMRB		86TAF 81KOP/PIK
C <sub>3</sub> HN <sup>-</sup> C=CHCN <sup>-</sup> ·					
<402			IMRB	$O^- + CH_2 = CHCN \rightarrow$	76DAW/JEN
C <sub>3</sub> HN <sup>-</sup>			······································		
HC≡C-CN <sup>-</sup> · 134±19			EIAP	$\Delta_f H(A) = 351$ From CH <sub>2</sub> = CHCN	<i>85HAR</i> 86HEN/ILL2
C <sub>3</sub> HN <sub>2</sub> - HC(CN) <sub>2</sub> -				$\Delta_f H(AH) = 266 \pm 2$	77PED/RYL
_	1405±11 g	1373±8	IMRE		81FUJ/MCI
* 141±13 <sup>8</sup>	1406±11 <sup>g</sup>	1373±8	IMRE		78CUM/KEB
$C_3H_2^ H_2C=C=C^-$					
1.794±0.025 <191	5			From propene discharge O <sup>-</sup> + allene →	860AK/ELL 76DAW/JEN
C <sub>3</sub> H <sub>2</sub> Cl <sup>−</sup> CICH <sub>2</sub> C≡C <sup>−</sup>			Est	$\Delta_f H(AH) = 169 \pm 13$ $BDE(A-H) = 552 \pm 21$	
• 179±22 <sup>a</sup>	1540±10 g	1507±8	IMRE	DDL(A-11) 332121	86TAF
C <sub>3</sub> H <sub>2</sub> ClF <sub>4</sub> O <sup>-</sup>					
(CF <sub>2</sub> H) <sub>2</sub> CO··Cl <sup>-</sup> • -1198 <sup>c</sup>		76±8	IMRE		84LAR/MCM
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> O <sup>-</sup>		···	Est	$\Delta_f H(AH) = -811 \pm 13$	
CH <sub>2</sub> = C(CF <sub>3</sub> )O <sup>-</sup> • -880±22 a • 2.6±0.1	1461±10 g	1431±8	<i>D-EA</i> IMRE PD	$BDE(A-H) = 398\pm22$	86TAF 77ZIM/REE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA( $\Delta_f H(X \cdots Y^-)$ eV		ΔH <sub>acid</sub> (AH) AH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y')$	Method	Comment	Reference
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> O <sup>-</sup> CH <sub>2</sub> =C(CF <sub>3</sub> )O <sup>-</sup>		1466±15 g	1436±8	Est D-EA IMRE	$\Delta_f H(AH) = -811 \pm 13$ $BDE(A-H) = 398 \pm 22$	78CUM/KEB
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> O <sub>2</sub> <sup>-</sup> CF <sub>3</sub> CH <sub>2</sub> CO <sub>2</sub> <sup>-</sup>	d			Est	$\Delta_f H(AH) = -1085 \pm 8$ $BDE(A-H) = 444 \pm 8$	
* -1215±19 <sup>a</sup> 3.68±	0.20 4	1401±11 g	1371±8	IMRE		86TAF
$C_3H_2F_4NO^ (CF_2H)_2O \cdot \cdot CN^-$		92±15 g	63±10	IMRE		87LAR/MCM
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> O <sup>-</sup> CF <sub>3</sub> CF <sub>2</sub> CH <sub>2</sub> O <sup>-</sup>				<u></u>	$\Delta_f H(AH) = -1310 \pm 3$ $BDE(A-H) = 435 \pm 8$	77PED/RYL
-1354±33 a 2.7±0	.4 đ	1487±30 g	1459±25	IMRB	Between (CF <sub>3</sub> ) <sub>2</sub> CHOH, CF <sub>3</sub> CH <sub>2</sub> OH	77DAW/JEN
C <sub>3</sub> H <sub>2</sub> F <sub>7</sub> O <sup>-</sup> (CF <sub>3</sub> ) <sub>2</sub> CHOH··F		405.05	105.0	n.05		207.47.04574
* -1889±19 <sup>c</sup>		105±8 <sup>g</sup>	185±8	IMRE		83LAR/MCM
C <sub>3</sub> H <sub>2</sub> N <sup>-</sup> CH <sub>2</sub> =CCN <sup>-</sup>					$\Delta_f H(AH) = 184 \pm 2$	82CHU/NGU
* 207±14 <sup>a</sup>		1553±12 <sup>g</sup> 1524±19	1528±8 1523±8	IMRE EIAP IMRE <sup>0</sup>	From CH <sub>2</sub> = CHCN	80BAR 86HEN/ILL2 80BAR
C <sub>3</sub> H <sub>2</sub> NO <sup>-</sup> CH <sub>2</sub> =C(CN)O <sup>-</sup>				Est2	$\Delta_f H(AH) = 22$ $BDE(A-H) = 406\pm8$	
	0.20 d	1441±11 <sup>g</sup>	1413±8 1432±21	IMRE IMRB		86TAF 68BRA/BLA
C <sub>3</sub> H <sub>2</sub> NO <sub>2</sub> <sup>-</sup> NCCH <sub>2</sub> CO <sub>2</sub> <sup>-</sup>				Est2	$\Delta_f H(AH) = -297 \pm 21$ $BDE(A-H) = 444 \pm 8$	
* -445±32 <sup>a</sup> 3.87±	0.20 d	1382±11 g	1354±8	IMRE		86TAF
C <sub>3</sub> H <sub>2</sub> N <sub>2</sub> - pyrazolide-						
*		1480±11 g	1449±8	IMRE		86TAF/ANV
C <sub>3</sub> H <sub>3</sub> - CH <sub>2</sub> =C=CH-					$\Delta_f H(AH) = 191 \pm 1$ $BDE(A-H) = 367 \pm 8$	77PED/RYL 82MCM/GOL
* 253±12 a 0.893	±0.026	1592±11 <sup>e</sup>	1556±13 <sup>h</sup>	LPES SI	20110-111- 00110	830AK/ELL 69PAG/GOO
C <sub>3</sub> H <sub>3</sub> <sup>-</sup> MeC≡C <sup>-</sup>					$\Delta_f H(AH) = 187 \pm 2$ BDE(A-H) = 552 \pm 21	77PED/RYL
* 251±12 <sup>a</sup> 2.80±	0.32 <sup>d</sup> 2±0.04	1595±10 <sup>g</sup>	1562±8	IMRE LPES	• •	79BAR/SCO 83OAK/ELL
			1556±8	IMRE <sup>0</sup>		79BAR/SCO

Table 2. Negative Ion Table - Continued

Table	2. Negative 101	n Table	- Continued	· · · · · · · · · · · · · · · · · · ·
	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
			$\Delta_f H(AH) = 187 \pm 2$ $BDE(A-H) = 374 \pm 8$	77PED/RYL
1601±23 <sup>e</sup>		LPES		83OAK/ELL
		LPES		830AK/ELL
		EIAP	From CF <sub>3</sub> COMe	72THY
		Est	$\Delta_f H(AH) = -561 \pm 21$	
1466±15 g	1436±13 1433±10		Between PhCH <sub>2</sub> CN, CF <sub>3</sub> COCH <sub>3</sub>	80FAR/MCM 80FAR/MCM
77.158	46.10	IMPE		87LAR/MCM
//±13 5	40±10	IMRE		6/LAIQMEN
103±15 <sup>g</sup>	69±10	IMRE		87LAR/MCM
		IMPD	OT LECTION	76DAW/JEN
		IMIKB	U TEICHT	TODAWIJEN
		IMRB	$N_2O + CH_2 = CHCH_2^- \rightarrow$	77BIE/DEP
60 16 <sup>9</sup>	20.10	IMPE		87LAR/MCM
09±13 &	30±10	IMICE		
1465±11 <sup>g</sup>	1434±8	IMRE		86TAF/ANV
		ETS	$\Delta_f H(A) = 226 \pm 1$	<i>82BYS</i> 75NEN/SCH
			Λ <sub>4</sub> H(AH)= -432+8	
		LJIE		
	1466±15 g  103±15 g  69±15 g	1 <sub>acid</sub> (AH) ΔG <sub>acid</sub> (AH) <sub>aff</sub> (X··Y) ΔG <sub>aff</sub> (X··Y)  1601±23 c  1466±15 g 1436±13 1433±10  77±15 g 46±10  103±15 g 69±10	AGacid (AH)	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

Table 2. Negative Ion Table - Continued

	∆H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>3</sub> H <sub>4</sub> ClO <sub>2</sub> <sup>-</sup> ClCH <sub>2</sub> CH <sub>2</sub> CO <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -481 \pm 4$ $BDE(A-H) = 444 \pm 8$	
• -585±20 a 3.41±0.25 d	1426±16 <sup>g</sup>	1397±8	IMRE	, ,	78CUM/KEB
C <sub>3</sub> H <sub>4</sub> ClO <sub>2</sub> <sup>-</sup> MeCHClCO <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -472 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -594±22 a 3.61±0.19 d	1407±10 g	1380±8	IMRE	. ,	78CUM/KEB
C <sub>3</sub> H <sub>4</sub> F <sup>-</sup> CH <sub>2</sub> =CFCH <sub>2</sub> <sup>-</sup>					
•	1586±14 g	1559±13	IMRB		84BAR/BUR
	1579±10 g	1551±8	IMRB		78MCM/NOR
		1558±17	IMRB <sup>o</sup>		84BAR/BUR
	63±8 <sup>k</sup>	1546±13	IMRB <sup>0</sup>		78MCM/NOR
C <sub>3</sub> H <sub>4</sub> FO			Est	$\Delta_f H(AH) = -383 \pm 21$	
$CH_2 = C(CH_2F)O^-$				BDE(A-H)= 389±8	
-381±41 <sup>a</sup> 1.8±0.3 <sup>d</sup>	1532±21 <sup>g</sup>	1503±17	IMRB		80CLA/MCM
C <sub>3</sub> H <sub>4</sub> FO <sup>-</sup> CHF=C(Me)O <sup>-</sup>			Est	$\Delta_f H(AH) = -383 \pm 21$	
* -416±39 a	1497±18 g	1465±15		Between pyrrole, MeNO <sub>2</sub>	80FAR/MCM
		1469±10	IMRB <sup>0</sup>		80FAR/MCM
C <sub>3</sub> H <sub>4</sub> F <sub>3</sub> O <sup>-</sup> CF <sub>3</sub> CH(Me)O <sup>-</sup>			Est	$\Delta_f H(AH) = -905 \pm 8$ BDE(A-H) = 438 \pm 4	
* -928±19 <sup>a</sup>	1507±11 <sup>g</sup>	1480±8 1491±8	IMRE IMRE <sup>0</sup>	,	85CAL/MCM 85CAL/MCM
C <sub>3</sub> H <sub>4</sub> N <sup>-</sup> MeCHCN <sup>-</sup>				$\Delta_f H(AH) = 51$ $BDE(A-H) = 377 \pm 4$	82CHU NGU 82MCM GOL
* 90±11 <sup>a</sup> 1.24±0.16 <sup>d</sup>	1569±11 <sup>g</sup>	1537±8	IMRE		79BAR/SCO
		1532±8	IMRE <sup>0</sup>		79BAR/SCO
$C_3H_4NO^-$ $CH_2 = C(NO)CH_2^-$					
-		1586±21	IMRB	•	86KAS/FIL
C <sub>3</sub> H <sub>4</sub> NO <sup>-</sup> CH <sub>2</sub> =CH-CH=NO <sup>-</sup>					
		1504±13	IMRB		86KAS/FIL
C <sub>3</sub> H <sub>4</sub> NO <sup>-</sup> McOCHCN <sup>-</sup>			Est	$\Delta_f H(AH) = -35\pm 8$	
* -10±23 <sup>a</sup>	1556±15 <sup>g</sup>	1524±8 1522±8	IMRE IMRE <sup>0</sup>		79BAR/SCO 79BAR/SCO
C <sub>3</sub> H <sub>4</sub> O <sup>-</sup>					
CH <sub>2</sub> = C(CH <sub>2</sub> .)O <sup>-</sup> <132			IMRB	O <sup>-</sup> + Me <sub>2</sub> CO →	79DAW/NOE2

Table 2. Negative Ion Table - Continued

	Table	2. Negative Ion	n rabie	- Continued		
	∆H <sub>acid</sub> (AH) AH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method		Comment	Reference
 C <sub>3</sub> H <sub>5</sub> <sup>-</sup>				$\Delta_f H(AH) = 20$		77PED/RYL
CH <sub>2</sub> =CHCH <sub>2</sub>				BDE(A-H)= 36	52±6	79ROS/GOL
* 125±10 a 0.41±0.17 d	1635±10 g	1607±8	IMRE			79BAR/SCO
* 0.362±0.020			LPES			840AK/ELL
0.551±0.052			LPD			77ZIM/BRA
•	1633±4 g	1605±2	IMRE			78MAC/LIE
C <sub>3</sub> H <sub>5</sub> <sup>-</sup> CH <sub>2</sub> =CMe <sup>-</sup>				$\Delta_f H(AH) = 20$		77PED RYL
> 184±3 a	> 1694±3 <sup>g</sup>	> 1661	IMRB			86FRO/FRE
C <sub>3</sub> H <sub>5</sub> - MeCH = CH-				$\Delta_f H(AH) = 20$		77PED/RYL
> 184±4 <sup>a</sup>	>1694±4 g	> 1661	IMRB			86FRO/FRE
C <sub>3</sub> H <sub>5</sub> <sup>-</sup>				$\Delta_f H(AH) = 53$	±1	77PED/RYL
cyclopropanide -				BDE(A-H) = 44	15±1	82MCM/GOL
<ul> <li>247±9 <sup>a</sup> 0.3±0.1 <sup>d</sup></li> </ul>	1724±8	1687±11 <sup>h</sup>	Bran			84DEP/BIE
> 213±3 <sup>a</sup>	> 1690±3 g	> 1654	IMRB			72BOH/LEE
		> 1654	IMRB			86FRO/FRE
$C_3H_4D^ CH_2 = CDCH_2^-$ 0.373±0.020			LPES			83OAK/ELL
0.373±0.020			LIE			
$C_3D_5^ CD_2 = CDCD_2^ 0.380 \pm 0.026$			LPES			83OAK/ELL
C-H-CINO-			<u></u> -,			
C <sub>3</sub> H <sub>5</sub> ClNO <sup>-</sup>						
CICH <sub>2</sub> CH <sub>2</sub> OH··CN <sup>-</sup> • −275±28 <sup>c</sup>	88±15 <sup>g</sup>	56±10	IMRE			87LAR/MCM
C <sub>3</sub> H <sub>5</sub> FNO <sup>−</sup> FCH <sub>2</sub> CH <sub>2</sub> OH··CN <sup>−</sup>						
* -428±32 °	85±15 g	54±10	IMRE			87LAR/MCM
C <sub>3</sub> H <sub>5</sub> F <sub>2</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -62$ $BDE(A-H) = 43$		
(FCH <sub>2</sub> ) <sub>2</sub> CHO <sup>-</sup> * -628±25 <sup>a</sup>	1521±21 g	1492±17	IMRR	Between McCHC		80CLA/MCM
-02022	1321221	1498±17	IMRB <sup>0</sup>		-, <del>.</del>	80CLA/MCM
C <sub>3</sub> H <sub>5</sub> F <sub>2</sub> O <sup>-</sup>						
c-CH <sub>2</sub> (O)CHCH <sub>2</sub> F··F	107±8 <sup>g</sup>	77±8	IMRE			83LAR/MCM
C <sub>3</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup>			Est2	$\Delta_f H(AH) = -44$	1±8	
$H_2NCON = C(Me)O^-$	1458±12 <sup>g</sup>	1427±8	IMRE	Acid: acetylurea		78CUM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA	(A) ΔH	I <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$ ev		$aff(X \cdot \cdot Y^{-})$	$\Delta G_{aff}(X \cdot Y)$		Comment	Reference
C <sub>3</sub> H <sub>5</sub> O <sup>-</sup>					$\Delta_f H(AH) = -217$	76CHAIZWO
$CH_2 = C(Me)O^-$					$BDE(A-H) = 411 \pm 11$	70SOLIGOL
* -203±11 <sup>a</sup> 1.86	±0.23 a	1544±11 <sup>g</sup>	1514±8	IMRE		79BAR/SCO
• 1.75	7±0.033			LPES		82ELL/ENG
		1546±11 g	1516±8	IMRE		78CUM/KEB
1.76	±0.06			PD		77ZIM/REE
			1513±8	IMRE		79BAR/SCO
C <sub>3</sub> H <sub>5</sub> O <sup>-</sup>					$\Delta_f H(AH) = -187 \pm 2$	77PED/RYL
MeCH = CHO		_		D-EA	$BDE(A-H) = 372\pm12$	
• -189±12 <sup>a</sup>		1528±10 g	1501±8	IMRE		79BAR/SCO
• 1.61	1±0.023			LPES		82ELL/ENG
		1531±10 g	1504±8	IMRE		78CUM/KEB
1.69	±0.06			PD		77ZIM/REE
			1503±8	IMREO		79BAR/SCO
C <sub>3</sub> H <sub>5</sub> O <sub>2</sub> <sup>-</sup>					$\Delta_f H(AH) = -410\pm 1$	77PED/RYL
$CH_2 = C(OMe)O^-$				D-EA	$BDE(A-H) = 418\pm15$	
• -384±10 a		1556±10 g	1528±8	IMRE		79BAR/SCO
* 1.80	±0.06			PD		77ZIM/REE
			1524±8	IMREO		79BAR/SCO
C <sub>3</sub> H <sub>5</sub> O <sub>2</sub> -					$\Delta_f H(AH) = -448 \pm 2$	77PED/RYL
EtCO2					$BDE(A-H) = 445\pm8$	82MCM/GOL
* -525±14 <sup>a</sup> 3.15:	±0.21 <sup>d</sup>	1454±12 g	1424±8	IMRE		78CUM/KEB
С <sub>3</sub> Н <sub>5</sub> О <sub>3</sub> -				Est2	$\Delta_f H(AH) = -556 \pm 17$	
MeOCH <sub>2</sub> CO <sub>2</sub>					$BDE(A-H) = 444\pm8$	
* -657±28 <sup>a</sup> 3.38:	±0.20 <sup>d</sup>	1429±11 g	1402±8	IMRE		86TAF
C <sub>3</sub> H <sub>6</sub> ClF <sub>2</sub> O <sup>-</sup>						
(FCH <sub>2</sub> ) <sub>2</sub> CHOH··C	:1					
• -946±14 <sup>c</sup>		99±8 g	67±8	IMRE		84LAR/MCM2
C <sub>3</sub> H <sub>6</sub> ClO <sup>-</sup>						
Me <sub>2</sub> CO··Cl <sup></sup>		ea. a 9			•	
• -504±10 °		59±8 g	34±8	IMRE		84LAR/MCM2
		57±8	33±8	TDAs		82FRE/IKU
C <sub>3</sub> H <sub>6</sub> F <sub>3</sub> O <sup>-</sup>	_					
(FCH <sub>2</sub> ) <sub>2</sub> CHOH··F						
* -1026±15 <sup>c</sup>		158±8 g	125±8	IMRE		83LAR/MCM
C <sub>3</sub> H <sub>6</sub> IO <sub>2</sub> -						
EtCO <sub>2</sub> H··I						
* -706±7 <sup>c</sup>		69±4	44±9	TDAs		84CAL/KEB
7 II NO-						
C <sub>3</sub> H <sub>6</sub> NO <sup>-</sup> EtOH · · CN <sup>-</sup> * -233±24 °		73±15 <sup>g</sup>				

Table 2. Negative Ion Table - Continued

	∆H <sub>acid</sub> (AH) <i>H<sub>aff</sub>(X··Y</i> ¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method Comment	Reference
C <sub>3</sub> H <sub>6</sub> NO <sup>-</sup> HCON(Me)CH <sub>2</sub> <sup>-</sup>			$\Delta_f H(AH) = -192 \pm 2$	77PEDIRYL
* -52±21 <sup>a</sup>	1670±19 <sup>g</sup>	1640±17	IMRB	85DEP/GRA
C <sub>3</sub> H <sub>6</sub> NO <sup>-</sup> Me <sub>2</sub> C=NO <sup>-</sup>			Est2 $\Delta_f H(AH) = -63\pm13$	
• -61±25 <sup>a</sup>	1532±12 <sup>g</sup>	1502±8 1505±8	IMRE IMRE <sup>0</sup>	79BAR/SCO 79BAR/SCO
C <sub>3</sub> H <sub>6</sub> NO <sup>-</sup> Me <sub>2</sub> CO··CN <sup>-</sup>				
* -204±24 °	62±15 <sup>g</sup>	33±10	IMRE	87LAR/MCM
C <sub>3</sub> H <sub>6</sub> NO <sub>2</sub> - H <sub>2</sub> NCH(Me)CO <sub>2</sub> -			$\Delta_f H(AH) = -414\pm 4$ $BDE(A-H) = 444\pm 8$	77NGAISAB
* -519±14 <sup>a</sup> 3.42±0.19 <sup>d</sup>	1425±10 <sup>g</sup>	1396±8	IMRE	83LOC/MCI
C <sub>3</sub> H <sub>6</sub> NO <sub>2</sub> - HN=C(OEt)O-			$\Delta_f H(AH) = -446 \pm 8$	75BERIBOU
* -462±20 <sup>a</sup>	1514±12 g	1485±9	IMRE	86TAF
C <sub>3</sub> H <sub>6</sub> NO <sub>2</sub> <sup>-</sup> Me <sub>2</sub> C=NO <sub>2</sub> <sup>-</sup>			$\Delta_f H(AH) = -139 \pm 1$	77PEO/RYL
• -179±13 <sup>a</sup>	1490±12 g	1464±8	IMRE	79BAR/SCO
	1491±12 g	1466±8	IMRE	78CUM/KEB
		1474±8	IMRE <sup>0</sup>	79BAR/SCO
C <sub>3</sub> H <sub>6</sub> NO <sub>2</sub> <sup>-</sup> MeNHCH <sub>2</sub> CO <sub>2</sub> <sup>-</sup>			$\Delta_f H(AH) = -368 \pm 1$ $BDE(A-H) = 444 \pm 8$	77SAB/LAF
• -469±10 <sup>a</sup> 3.39±0.19 <sup>d</sup>	1429±10 g	1400±8	IMRE	83LOC/MCI
C <sub>3</sub> H <sub>6</sub> NS <sup>-</sup> HCSN(Me)CH <sub>2</sub> <sup>-</sup>				
•	1587±11 <sup>g</sup>	1558±8 1561±8	IMRE IMRE <sup>0</sup>	85ING/NIB3 85ING/NIB3
C <sub>3</sub> H <sub>7</sub> <sup>-</sup> Mc <sub>2</sub> CH <sup>-</sup>			$\Delta_f H(AH) = -105$ $BDE(A-H) = 398\pm4$	74SCO 82MCM/GOL
* 118±9 <sup>a</sup> 0.7	1753±8	1719±10 <sup>h</sup>	Bran SI	84DEP/BIE 69PAG/GOO
			And the second s	
	51	26	TDAs	74DOU
C <sub>3</sub> H <sub>7</sub> Br <sub>2</sub> <sup>-</sup> nPrBr··Br <sup>-</sup>				
9	49	24	TDAs	74DOU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>3</sub> H <sub>7</sub> ClSi <sup>-</sup>						
HCSiMe <sub>2</sub> Cl <sup>-</sup> ·					P 14 PP	
-93±21				EIAP	From Me <sub>3</sub> SiCl	68JAE/HEN
C <sub>3</sub> H <sub>7</sub> N <sub>2</sub> O <sup>-</sup> HN = C(NMc <sub>2</sub>	2)0-			Est2	$\Delta_f H(AH) = -243 \pm 13$	
* -259±25 <sup>a</sup>		1514±13 g	1484±10	IMRE		86TAF
C <sub>3</sub> H <sub>7</sub> O <sup>-</sup>					$\Delta_f H(AH) = -273$	77PED/RYL
iPrO <sup>-</sup>					BDE(A-H)= 438±4	82MCM/GOL
* -232±10 <sup>a</sup>	1.86±0.14	d 1571±10 g	1543±8	IMRE		79BAR/SCO
*	1.839±0.02			LPES		82ELL/ENG
	1.7±0.1			EIAP	From iPrONO	68WIL/HAM
	>1.7			EIAP	From iPrOH	63TRE/NEU
	0.7			SI		69PAG/GOO
			1538±8	IMRE		79BAR/SCO
C-H-O-	<del></del>				A. U/AU) 055.1	77PED/RYL
C <sub>3</sub> H <sub>7</sub> O <sup>-</sup>					$\Delta_f H(AH) = -255 \pm 1$	
* -212±10 a	1.78±0.14	d 1573±9 g	1546.0	T) (T) 17	BDE(A-H)= 433±4	82MCM/GOL
-212±10			1546±8	IMRE		79BAR/SCO
•	1.789±0.03	3		LPES	T DOVO	82ELL/ENG
	1.9±0.1			EIAP	From nPrONO	68WIL/HAM
	> 1.8		1540.0	EIAP	From nPrOH	63TRE/NEU
			1540±8	IMRE <sup>0</sup>		79BAR/SCO
$C_3H_7O_2^-$				Est	$\Delta_f H(AH) = -366 \pm 4$	
McOCH <sub>2</sub> CH <sub>2</sub>		_			$BDE(A-H) = 436\pm4$	
* -332±16 <sup>a</sup>	1.90±0.17	1 1564±12 <sup>g</sup>	1535±8	IMRE		79BAR/SCO
			1530±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>3</sub> H <sub>7</sub> S <sup>-</sup>					$\Delta_f H(AH) = -76 \pm 1$	77PEDIRYL
iPrS					BDE(A-H)= 364±9	
* -128±13 <sup>a</sup>	2.05±0.22 C	i 1479±12 g	1452±8	IMRE	. ,	79BAR/SCO
•	2.020±0.02	_		LPD		80JAN/REE
			1461±8	IMREO		79BAR/SCO
C <sub>3</sub> H <sub>7</sub> S <sup>-</sup>					$\Delta_f H(AH) = -68$	77PED/RYL
nPrS					$BDE(A-H) = 364\pm9$	777 2571112
	2.02±0.22 °	i 1482±12 g	1456±8	IMRE	DELITY OUTES	79BAR/SCO
+ -110±12	2.000±0.02		145010	LPD		80JAN/REE
	2.00020.02	•	1465±8	IMRE <sup>0</sup>		79BAR/SCO
C3H7Si-	~				$\Delta_f H(AH) = 21 \pm 17$	86WAL
CH <sub>2</sub> = Si(Me)( • 104±41 <sup>a</sup>	-r₁ <sub>2</sub>	1613±25 g	1586±21	IMRB		86DAM/DEP
C-H-R-					A.U/AU)102-10	77PED/RYL
C <sub>3</sub> H <sub>8</sub> B <sup>-</sup>					$\Delta_f H(AH) = -123 \pm 10$	
Me <sub>2</sub> BCH <sub>2</sub>	10.054	1500 00 0	1500 05	17 100	BDE(A-H)= 397±21	71BEUPLA
-120±39 <sup>a</sup>	1.8±0.5 °	1532±29 g	1502±25		Between AsH <sub>3</sub> , PH <sub>3</sub>	76MUR/BEA
			1492±20	IMRB <sup>0</sup>		76MUR/BEA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$	EA(A)	ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y})$		$\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{aff}(X \cdot Y)$			
C <sub>3</sub> H <sub>8</sub> ClO <sup>-</sup>						
iPrOH · · Cl **		74.0°	45.0	D (DE)		OAL A DAMOMO
• -574±10 °		74±8 g	45±8	IMRE		84LAR/MCM2
C <sub>3</sub> H <sub>8</sub> ClO-						
nPrOH · · Cl * -556±10 °		74±8 g	45±8	IMRE		84LAR/MCM2
-330±10		74,200	4020	IMINE		OTE HVIIIONE
C <sub>3</sub> H <sub>8</sub> FO						
iPrOH · · F ¯ • −657±11 °		135±8 <sup>g</sup>	103±8	IMRE		83LAR/MCM
-03/±11		133200	105±6	TIVITOLS		
C <sub>3</sub> H <sub>8</sub> FO						
nPrOH··F¯ • -639±11 <sup>c</sup>		135±8 <sup>g</sup>	103±8	IMRE	•	83LAR/MCM
-037±11		133110-	10010			
C <sub>3</sub> H <sub>8</sub> IO <sup>-</sup>						
iPrOH · · I <sup>—</sup> *   −512±5 <sup>c</sup>		51±4	27±9	TDAs		84CAL/KEB
31213		J11.				
C <sub>3</sub> H <sub>8</sub> N <sup>-</sup>				Est	$\Delta_f H(AH) = -46 \pm 4$	2014014/001
Et(Me)N <sup>-</sup> • 77±15 <sup>a</sup>	0.43±0.20	d 1653±11 g	1621±8	IMRE	$BDE(A-H) = 383 \pm 8$	<i>82MCM/GOL</i> 85ING/NIB2
//#13	0.43±0.20	10031110	102110			
C <sub>3</sub> H <sub>8</sub> N <sup>-</sup>					$\Delta_f H(AH) = -24$	77PED/RYL
Me <sub>2</sub> NCH <sub>2</sub>		4500 F	. 4668	n (DD	BDE(A-H)= 351±8	82MCM/GOL
		>1700 g	> 1665	IMRB		78MAC/BOH2
C <sub>3</sub> H <sub>8</sub> N <sup>-</sup>					$\Delta_f H(AH) = -84 \pm 1$	77PED/RYL
iPrNHT	no nad	1600 169	1601 10	n (DD	BDE(A-H)= 423±13	71BRA/BLA
49±17 <sup>a</sup>	0.8±0.3 <sup>đ</sup>	1662±16 <sup>g</sup>	1631±13	IMRB		TIBRADLA
C <sub>3</sub> H <sub>8</sub> N <sup>-</sup>					$\Delta_f H(AH) = -70$	77PED/RYL
nPrNH <sup>—</sup> 67±17 <sup>a</sup>	0.7±0.3 <sup>d</sup>	1667±16 <sup>g</sup>	1636±13	IMRB	$BDE(A-H) = 423\pm13$	71BRA/BLA
	0.710.5	1007110	1030113			
C <sub>3</sub> H <sub>8</sub> NO						
iPrOH · · CN <sup>-</sup> • -274±24 <sup>c</sup>		76±15 g	45±10	IMRE		87LAR/MCM
274224		,0115	70410			•
C <sub>3</sub> H <sub>8</sub> P					$\Delta_f H(AH) = -101 \pm 5$	77PED/RYL
Me <sub>2</sub> PCH <sub>2</sub> - • 5±16 <sup>a</sup>		1636±11 <sup>g</sup>	1606±8	IMRE		85ING/NIB2
2110		TOJOITI	100010			
C <sub>3</sub> H <sub>9</sub> BF <sup>-</sup>						
Mc <sub>3</sub> B··F		107.02	166.0	1 <b>1.4D</b> 17		85LAR/MCM
* -569±21 <sup>c</sup> -616 <sup>c</sup>		197±8 <sup>g</sup> 245	166±8	IMRE IMRB	$F^-A$ : MeSiF <sub>3</sub> > Me <sub>3</sub> B > SF <sub>4</sub>	77MUR/BEA2
010		- 10			3 3	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$	EA(A)	ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\mathbf{Y}^{-})$		$\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{aff}(X \cdots Y^{-})$	111001100	Commen	Reference
C <sub>3</sub> H <sub>9</sub> BFO <sub>3</sub>	_	-				
(MeO) <sub>3</sub> B··F <sup>-</sup> * −1324±21 <sup>c</sup>		176±17 <sup>g</sup>	142±13	IMRB		85LAR/MCM
C <sub>3</sub> H <sub>9</sub> F <sub>2</sub> Si <sup>-</sup> Me <sub>3</sub> SiF··F						
*		160±8 <sup>g</sup>	132±8	IMRE		85LAR/MCM
		< 226±42		IMRB		77MUR/BEA3
C <sub>3</sub> H <sub>9</sub> O <sub>2</sub>						
EtOH··MeO	-	25.429				0.0.1.007
-459±20 <sup>c</sup>	. ,	85±10 <sup>g</sup>	57±8	IMRE		84CAL/ROZ
C <sub>3</sub> H <sub>9</sub> Si <sup>-</sup>					$\Delta_f H(AH) = -163 \pm 8$	81WAL
Me <sub>3</sub> Si¯ −98±23 <sup>a</sup>	1.0±0.3 d	1595±15 <sup>g</sup>	1565±13	IMRB	$BDE(A-H) = 378 \pm 17$	<i>81WAL</i> 87THO/BAR
	1.020.5	10/3110 -	1505115			0,1110,5111
C <sub>3</sub> H <sub>10</sub> NSi <sup>-</sup> Me <sub>3</sub> SiNH <sup>-</sup>						
14103011411		1585±15 <sup>g</sup>	1552±13	IMRB		87THO/BAR
C <sub>4</sub> C <sub>0</sub> O <sub>4</sub>				· · · · · · · · · · · · · · · · · · ·		
Co(CO) <sub>4</sub>						
			<1294±8	IMRB		87STE/BEA
C <sub>4</sub> F <sub>4</sub> O <sub>3</sub> -						
tetrafluorosuco	inic anhyd 0.5±0.2	ride		NBIP		7400010014
	U.5±U.2			NDIL		74COO/COM
C <sub>4</sub> F <sub>5</sub>						
C <sub>4</sub> F <sub>5</sub> <sup></sup> -685	2.0			EIAP	From c-C <sub>4</sub> F <sub>6</sub>	79SAU/CHR
			<del></del>		4 0	
C <sub>4</sub> F <sub>6</sub> O <sup>-</sup> CF <sub>3</sub> CF <sub>2</sub> CFCO	<del>-</del> .					
-1331±58				EIAP	From CF <sub>3</sub> CF <sub>2</sub> ČF <sub>2</sub> CHO	75HAR/THY
C <sub>4</sub> F <sub>7</sub> <sup>-</sup>						
$C_4F_7^-$					$\Delta_f H(A) = -1167 \pm 29$	83SPY/SAU
−1457±73 <sup>b</sup>				EIAP	From n-C <sub>6</sub> F <sub>14</sub>	83SPY/SAU
	0.9±0.2			EIAP	From $CF_3CF = CFCF_3$	72LIF/GRA
	2.7			SI		69PAG/GOO
C <sub>4</sub> F <sub>8</sub> <sup>-</sup>						
C <sub>4</sub> F <sub>8</sub> <sup>-</sup> ·	>0.7±0.4			EIAP	From n-C <sub>5</sub> F <sub>12</sub>	83SPY/SAU
C <sub>4</sub> F <sub>8</sub> -				<del></del>		
CF3CF = CFCF					$\Delta_f H(A) = -1602$	70BENIO'N
<-1670 b	>0.7±0.3			EnCT		73LIF/ITE

Table 2. Negative Ion Table - Continued

		Table	2. Negative Io	n Table	- Continued	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>4</sub> F <sub>8</sub> <sup>-</sup> c-C <sub>4</sub> F <sub>8</sub> <sup>-</sup> · <-1581±39	<sup>1</sup> > 0.4±0.3			EnCT	$\Delta_f H(A) = -1543 \pm 10$	77PED/RYL 73LIF/ITE
C <sub>4</sub> F <sub>8</sub> N <sup>-</sup>						
CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CI	N··F⁻	129±8 g	99±8	IMRE		85LAR/MCM
C <sub>4</sub> F <sub>9</sub> <sup>-</sup> (CF <sub>3</sub> ) <sub>2</sub> CFCF <sub>2</sub>	-					
\ 3/L L	3.5±0.5 3.5±0.5			EIAP EIAP	From $i-C_4P_{10}$ From $i-C_4P_{10}$	85SPY/HUN 83SPY/SAU
C <sub>4</sub> F <sub>9</sub> <sup>-</sup>						
(CF <sub>3</sub> ) <sub>3</sub> C				Est	$\Delta_f H(A) = -1820$	05001/4/11
	3.4±0.1 3.4±0.2			EIAP EIAP	From (CF <sub>3</sub> ) <sub>3</sub> CF From (CF <sub>3</sub> ) <sub>3</sub> CF	85SPY/HUN 83SPY/SAU
C <sub>4</sub> F <sub>9</sub> -						
-4-9	>4.0±0.2			EIAP	From n-C <sub>4</sub> F <sub>10</sub>	83SPY/SAU
	> 2.9±0.1			EIAP	From n-C <sub>5</sub> F <sub>12</sub>	83SPY/SAU
	3.2±0.3			EIAP	From n-C <sub>4</sub> F <sub>10</sub>	73HAR/THY2
C <sub>4</sub> F <sub>9</sub> <sup>-</sup>						
CF <sub>3</sub> CF <sub>2</sub> CF(CI	F <sub>3</sub> ) = > 3.2±0.1			EIAP	From i-C <sub>5</sub> F <sub>12</sub>	85SPY/HUN
C <sub>4</sub> F <sub>9</sub> O <sup>-</sup>				Est2	$\Delta_f H(AH) = -2297 \pm 21$	
(CF <sub>3</sub> ) <sub>3</sub> CO		4			BDE(A-H)= 439±8	0477417
* -2439±33 a	3.77±0.21	d 1388±12 g	1356±8	IMRE IMRB		86TAF 81KOP/PIK
-2442 <sup>a</sup> -2451 <sup>a</sup>			1352±21 1345±21	IMRB		80CLA/MCM
C <sub>4</sub> FeO <sub>4</sub>						· . · · · · · · · · · · · · · · · · · ·
Fe(CO) <sub>4</sub>					$\Delta_f H(A) = -414 \pm 23$	81SMILAI
• -646±52 b	2.398±0.3	00		LPES		79ENG/LIN2
	2.1±0.3		Fe(CO) <sub>5</sub> + e <sup>-</sup>	EIAP → Fe(CO)	4 + CO "near thermoneutral". BDE from 81SMI/LAI	76COM/STO
C <sub>4</sub> O <sup>-</sup>						
C <sub>4</sub> O <sup></sup>						
<b>T</b>	2.050±0.1	50		LPES		86OAK/ELL
C <sub>4</sub> HF <sub>5</sub> NO						
CF <sub>3</sub> COCF <sub>2</sub> H • -1234±44 °		108±15 <sup>g</sup>	75±10	IMRE		87LAR/MCM
C <sub>4</sub> HF <sub>10</sub> O <sup>-</sup>						
(CF <sub>3</sub> ) <sub>3</sub> COH·· • -2617±31 <sup>c</sup>		71±8 <sup>g</sup>	151±8	IMRE		83LAR/MCM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{ m acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>4</sub> HFeO <sub>4</sub>						
Fe(CO) <sub>4</sub> H						
			1313±23	IMRB		87STE/BEA
C <sub>4</sub> H <sub>2</sub> F <sub>6</sub> NO						
(CF <sub>3</sub> ) <sub>2</sub> CHOH						
* -1566±32 <sup>c</sup>		105±15 g	70±10	IMRE		87LAR/MCM
C <sub>4</sub> H <sub>2</sub> F <sub>7</sub> O <sup>-</sup>				Est2	$\Delta_f H(AH) = -1561 \pm 21$	
CF3CF2CF2C		_			BDE(A-H)= 435±8	
-1626±51 <sup>a</sup>	2.9±0.4 <sup>d</sup>	1465±30 <sup>g</sup>	1437±25	IMRB	Between (CF <sub>3</sub> ) <sub>2</sub> CHOH, CF <sub>3</sub> CH <sub>2</sub> OH	77DAW/JEN
C <sub>4</sub> H <sub>2</sub> NO <sub>2</sub> -				Est2	$\Delta_f H(AH) = -287 \pm 8$	
maleimidate <sup>-</sup>		1360±19		EIAP	From maleimide	73COO/COM
$C_4H_2N_2^-$					4 444)	0: "" " 10! !
fumaronitrile <sup>—</sup> • 219 b	1.24±0.10			TDEq	$\Delta_f H(A) = 339$	<i>82CHU/NGU</i> 87KEB/CHO
219	1.24±0.10 1.25±0.09			TDEq		86CHO/KEB
	0.8±0.1			SI		67FAR/PAG
C <sub>4</sub> H <sub>2</sub> O <sub>3</sub>						
maleic anhydric	de <sup></sup> ·				$\Delta_f H(A) = -397 \pm 4$	77PED/RYL
* -536±14 b				TDEq	,	87KEB/CHO
	1.41±0.11			IMRE		85GRI/CAL
	1.38±0.05			IMRE		85FUK/MCI
	1.4±0.2			NBIP		74COM/REI
C <sub>4</sub> H <sub>3</sub> F <sub>3</sub> NO						
CH <sub>3</sub> COCF <sub>3</sub> ··	CNT					
* -822±36 <sup>c</sup>		85±15 <sup>g</sup>	54±10	IMRE		87LAR/MCM
C <sub>4</sub> H <sub>3</sub> F <sub>6</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -1576 \pm 4$	
(CF <sub>3</sub> ) <sub>2</sub> C(Me)C	) <del>-</del>				$BDE(A-H) = 440\pm4$	
* -1648±14 <sup>a</sup>		1457±10 g	1425±8	IMRE	•	85CAL/MCM
			1431±8	IMRE		85CAL/MCM
C <sub>4</sub> H <sub>3</sub> N <sub>2</sub> <sup>-</sup>					$\Delta_f H(AH) = 197 \pm 1$	77PED/RYL
pyrimidinide <sup>—</sup> * 272±9 <sup>a</sup>		1606±8	1560+0	TDZ~		87MEO
2/2±9		1000±8	1569±8	TDEq		
$C_4H_3N_2O_3^-$					$\Delta_f H(AH) = -554 \pm 8$	72DOM
barbiturate a		1402 - 12 9	1260.0	TM (D)77	A cids boulstands said	70C1 M/// DD
* -680±12 <sup>a</sup>		1402±12 g	1369±8	IMRE	Acid: barbituric acid	78CUM/KEB
C <sub>4</sub> H <sub>3</sub> O <sup>-</sup>						
CH <sub>2</sub> =CHC≡C	0-					
< 35				IMRB	$CH_2 = CHCH_2^- + CF_2 = O \rightarrow$	79DAW/NOE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A)	ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
Δ <sub>f</sub> H(X··Y¯) eV	$\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{aff}(X \cdot \cdot Y)$			
C <sub>4</sub> H <sub>3</sub> O⁻ McCOC≅C⁻			Est2	$\Delta_f H(AH) = 67 \pm 13$ $BDE(A-H) = 552 \pm 21$	
* 44±23 <sup>a</sup>	1507±10 g	1474±9	IMRE	DOCATION DOCES	86TAF
C <sub>4</sub> H <sub>3</sub> O <sub>2</sub> -			Est2	$\Delta_f H(AH) = -142 \pm 13$	
MeOCOC=C <sup>-</sup> • -171±22 <sup>a</sup>	1501±10 <sup>g</sup>	1469±8	IMRE	$BDE(A-H) = 552\pm21$	8 <i>6</i> TAF
C <sub>4</sub> H <sub>4</sub> F <sub>3</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -649 \pm 13$	
$CH_2 = C(CF_3)CH_2$				•	04D 4 D (DI ID
• -615±23 <sup>a</sup>	1565±10 g	1537±8 1532±8	IMRE IMRE <sup>C</sup>		84BAR/BUR 84BAR/BUR
		133210			
C <sub>4</sub> H <sub>4</sub> F <sub>3</sub> O <sub>2</sub> S <sup>-</sup>			Est2	$\Delta_f H(AH) = -929 \pm 13$	
$CF_3SO_2CH = CHCH_2^-$ • -1023±23 a	1436±11 <sup>g</sup>	1407±8	IMRE		86TAF
C <sub>4</sub> H <sub>4</sub> F <sub>7</sub> O <sup>-</sup>					
$(CF_3)_2C(Me)OH \cdot \cdot F$					207 - 77 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
• -1933±15 <sup>c</sup>	109±8 g	189±8	IMRE		83LAR/MCM
C4H4N-				$\Delta_f H(AH) = 130$	80WILI BAE
$CH_2 = C(CN)CH_2^-$ * 151 a	1551±10 g	1523±8	IMRE		84BAR/BUR
		1523±8	IMRE		84BAR/BUR
C <sub>4</sub> H <sub>4</sub> N <sup>-</sup>					
$CH_2 = CHCH = C = N^T$					000 4 11/0 110
		<1527±8	IMRB	Acid: CH <sub>2</sub> =CHCH <sub>2</sub> CN	80DAW/NIB
C <sub>4</sub> H <sub>4</sub> N <sup>-</sup>				$\Delta_f H(AH) = 184 \pm 1$	82FUC/HAL
c-(CH <sub>2</sub> ) <sub>2</sub> CCN <sup>-</sup> * 225±13 <sup>a</sup>	1571±12 g	1539±8	IMDE	Acidemanogralopropane	79BAR/SCO
223=13	13/1±120	1533±8	IMRE	Acid:cyanocyclopropane	79BAR/SCO
C II N-				4 1//410	~~DED/DV/
C <sub>4</sub> H <sub>4</sub> N <sup>-</sup> pyrrolide <sup>-</sup>			D-FA	$\Delta_f H(AH) = 108$ $BDE(A-H) = 419\pm25$	77PED/RYL
* 79±13 <sup>a</sup>	1501±12 g	1468±8	IMRE	222(11)	79BAR/SCO
* 2.4±0.1			PD		75RIC/STE3
83±13 <sup>a</sup>	1505±12 <sup>g</sup>	1472±8	IMRE		78CUM/KEB
		1477±8	IMRE		79BAR/SCO
C <sub>4</sub> H <sub>4</sub> NO <sub>2</sub> <sup>-</sup> succinimidate <sup>-</sup>				$\Delta_f H(AH) = -360 \pm 8$	69BEN/CRU
• -445±18 <sup>a</sup>	1445±10 g	1414±8	IMRE		78CUM/KEB
	1379±19		EIAP		73COO/COM
C <sub>4</sub> H <sub>4</sub> NS <sup>-</sup>					
2-(thiofuryl)-NH	1472±11 <sup>g</sup>	1441±8	IMRE		86TAF
	14/9711	144170	1111111		VV44.84

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ I $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> <sup>-</sup> pyrazine <sup>-</sup> · 157 b	).4			Δ <sub>f</sub> H(A)= ETS	: 196±1	77PED/RYL 75NEN/SCH
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> <sup>-</sup> pyridazine <sup>-</sup> 254 b	).3			$\Delta_f H(A) =$ ETS	: 278±1	77PED/RYL 75NEN/SCH
C <sub>4</sub> H <sub>4</sub> N <sub>2</sub> <sup>-</sup> pyrimidine <sup>-</sup>	).0			$\Delta_f H(A) =$ ETS	197±1	77PED/RYL 75NEN/SCH
C <sub>4</sub> H <sub>5</sub> CIN <sup>-</sup> pyrrole··Cl <sup>-</sup> • -198±10 <sup>c</sup>		79±8 <sup>g</sup>	49±8 59	IMRE TDEq		84LAR/MCM2 82FRE/IKU
C <sub>4</sub> H <sub>5</sub> FN <sup>-</sup> pyrrole··F <sup>-</sup> -283±11 <sup>c</sup>		143±8 <sup>g</sup>	111±8	IMRE		83LAR/MCM
C <sub>4</sub> H <sub>5</sub> N <sup>-</sup> EtCCN <sup>-</sup> · <381				IMRB O + nPr	-CN→	76DAW/JEN
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> <sup>-</sup> 3-Me-pyrazolide	_	1485±11 <sup>g</sup>	1452±8	IMRE		86TAF
C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> <sup>-</sup> 4-Me-pyrazolide	_	1484±11 <sup>g</sup>	1454±8	IMRE		86TAF
C <sub>4</sub> H <sub>5</sub> O <sup>-</sup> CH <sub>2</sub> =C(CH=CI * -148±19 <sup>a</sup>	H <sub>2</sub> )O¯	1520±11 <sup>g</sup>	1492±8 1500±10	Δ <sub>f</sub> H(AH)= IMRE IMRE <sup>0</sup>	= −138±8	79VAJ HAR 86BAR/KIP 86BAR/KIP
C <sub>4</sub> H <sub>5</sub> O <sup>-</sup> CH <sub>2</sub> =C(CHO)C	н <sub>2</sub> -	1578±16 g	1549±13	IMRB		84BAR/BUR
C <sub>4</sub> H <sub>5</sub> O <sup>-</sup> CH <sub>2</sub> =CHCH=C • -149±11 <sup>a</sup>	но-	1484±10 g	1456±8 1466±10	$\Delta_f H(AH) =$ IMRE IMRE <sup>0</sup>	= -104±2	77PED/RYL 86BAR/KIP 86BAR/KIP
C <sub>4</sub> H <sub>5</sub> O <sup>-</sup> cyclobutanone eno * 1.8	olate <sup>-</sup> 34±0.07			<i>Est2</i> Δ <sub>f</sub> <i>H(AH)</i> =	88±4	78ZIM/JAC

Table 2. Negative Ion Table - Continued

$\begin{array}{ccc} \text{Ion } \Delta_f H(A^-) & \text{EA}(A) \\ \Delta_f H(X \cdot Y^-) & \text{eV} \end{array}$	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y⁻)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
C <sub>4</sub> H <sub>6</sub> BrO <sub>2</sub> <sup>-</sup>	<del></del>		Est2	$\Delta_f H(AH) = -477 \pm 13$	
EtCHBrCO2				$BDE(A-H) = 444 \pm 8$	
* -600±23 <sup>a</sup>	1407±11 g	1378±8	IMRE		85CAL/MCM
C <sub>4</sub> H <sub>6</sub> ClO <sub>2</sub>			Est	$\Delta_f H(AH) = -501 \pm 4$	
CI(CH <sub>2</sub> ) <sub>3</sub> CO <sub>2</sub> <sup>-</sup> • -586±20 <sup>a</sup> 3.22±0.25 <sup>d</sup>	1445±16 g	1416±8	IMRE	<i>BDE(A−H)</i> = 444±8	78CUM/KEB
C <sub>4</sub> H <sub>6</sub> ClO <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -492 \pm 13$	
EtCHCICO2	_			BDE(A-H)= 444±8	
* -610±22 <sup>a</sup> 3.56±0.19 <sup>d</sup>	1412±10 g	1384±8	IMRE		78CUM/KEB
C <sub>4</sub> H <sub>6</sub> ClO <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -516\pm 4$	
MeCHCICH <sub>2</sub> CO <sub>2</sub> <sup>-</sup> * ~616±20 <sup>a</sup> 3.37±0.25 <sup>d</sup>	1431±16 g	1401±8	IMRE	BDE(A-H)= 444±8	78CUM/KEB
	1431110	140110			/occimpand
$C_4H_6F_2NO^-$ ( $CH_2F$ ) <sub>2</sub> $CHOH \cdot \cdot CN^-$					
* -654±28 °	109±15 <sup>g</sup>	66±10	IMRE		87LAR/MCM
C <sub>4</sub> H <sub>6</sub> F <sub>3</sub> O <sup>-</sup>		<del></del>	Est	$\Delta_f H(AH) = -905 \pm 4$	
CF <sub>3</sub> C(Me) <sub>2</sub> O				$BDE(A-H) = 440\pm4$	
• -928±14 a 2.54±0.14 d	1507±10 g	1479±8 1490±8	IMRE IMRE <sup>0</sup>		85CAL/MCM 85CAL/MCM
		149010	IMINE		SCAL/WCW
C <sub>4</sub> H <sub>6</sub> N <sup>-</sup>				$\Delta_f H(AH) = 25 \pm 1$	77PED/RYL
Me <sub>2</sub> CCN <sup>-</sup> * 64±13 <sup>a</sup> 1.08±0.21 <sup>d</sup>	1570±12 <sup>g</sup>	1539±8	IMRE	BDE(A-H) = 362±8	<i>82MCM/GOL</i> 79BAR/SCO
04213 1.0820.21	1370±120	1534±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>4</sub> H <sub>6</sub> NO <sub>2</sub> -				$\Delta_f H(AH) = -430 \pm 4$	69BENICRU
$MeCON = C(Me)O^{-}$					
* -509±19 <sup>a</sup>	1451±15 <sup>g</sup>	1422±8	IMRE		78CUM/KEB
C <sub>4</sub> H <sub>6</sub> NO <sub>3</sub> -					
HN = C(CO <sub>2</sub> Et)O <sup>-</sup>	1472±11 g	1442±8	IMRE		86TAF
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub> -					
2,3-butanedione <sup></sup>				$\Delta_f H(A) = -327 \pm 1$	77PED/RYL
• -394±11 b 0.69±0.10			TDEq	•	87KEB/CHO
0.70±0.11			IMRE		85GRI/CAL
1.1			ES		66COM/CHR
C <sub>4</sub> H <sub>7</sub> -				$\Delta_f H(AH) = -17 \pm 1$	77PED RYL
$CH_2 = C(Me)CH_2^-$				$BDE(A-H) = 356 \pm 1$	77LIAIAUS
* 86±11 <sup>a</sup> 0.36±0.12 <sup>d</sup>	1633±10 g	1602±9	IMRE		84BAR/BUR
C <sub>4</sub> H <sub>7</sub> O <sup>-</sup>				$\Delta_f H(AH) = -241$	77PED/RYL
$CH_2 = C(Et)O^{-}$	1640.14 6	1520, 10 h	ממ	$BDE(A-H) = 406 \pm 8$	77711 # /D 1717
* -222±14 <sup>a</sup> 1.75±0.06	1549±14 <sup>e</sup>	1520±18 h	PD		77ZIM/REE

Table 2. Negative Ion Table - Continued

	H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
$C_4H_7O^ CH_2 = C(OMe)CH_2^-$			Est	$\Delta_f H(AH) = -144 \pm 4$	
-60±30 <sup>a</sup>	1614±26 g	1586±23	IMRB		84BAR/BUR
C <sub>4</sub> H <sub>7</sub> O <sup>-</sup> E <sub>1</sub> CH = CHO <sup>-</sup>				$\Delta_f H(AH) = -208 \pm 2$	77PED/RYL
• -206±19 a 1.67±0.05	1532±18 <sup>e</sup>	1504±22 h	PD	BDE(A-H)= 381±13	77ZIM/REE
C <sub>4</sub> H <sub>7</sub> O <sup>-</sup>				$\Delta_f H(AH) = -241$	77PED/RYL
$MeCH = C(Me)O^{-}$				$BDE(A-H) = 386 \pm 6$	82MCM/GOL
-231±13 <sup>a</sup> 1.64±0.19 <sup>d</sup>	1540±12 <sup>g</sup>	1512±8	IMRE		78CUM/KEB
* 1.67±0.05			PD	•	77ZIM/REE
C <sub>4</sub> H <sub>7</sub> O <sub>2</sub> -			Est	$\Delta_f H(AH) = -482 \pm 4$	
iPrCO <sub>2</sub>				$BDE(A-H) = 444 \pm 13$	
* -562±15 <sup>a</sup> 3.17±0.24 <sup>d</sup>	1449±11 g	1420±8	IMRE		86TAF
C <sub>4</sub> H <sub>7</sub> O <sub>2</sub> -				$\Delta_f H(AH) = -473 \pm 4$	82BUTIFRA
nPrCO <sub>2</sub>				$BDE(A-H) = 444\pm8$	
* -553±16 a 3.17±0.21 d	1450±12 <sup>g</sup>	1420±8	IMRE		78CUM/KEB
C <sub>4</sub> H <sub>7</sub> O <sub>4</sub> -					
MeCO <sub>2</sub> H··MeCO <sub>2</sub>					
-1059±17 <sup>c</sup>	123±4	85±7	TDAs		86MEO/SIE2
C <sub>4</sub> H <sub>8</sub> ClO <sup>-</sup>					
EtCOMe · · CIT					
* -530±10 <sup>c</sup>	62±8 <sup>g</sup>	36±8	IMRE		84LAR/MCM2
C <sub>4</sub> H <sub>8</sub> IO <sub>2</sub> -		<u> </u>			
iPrCO <sub>2</sub> H··I¯					
* -740±9 °	70±4	44±9	TDAs		84CAL/KEB
C <sub>4</sub> H <sub>8</sub> NO				$\Delta_f H(AH) = -234$	78BEA/LEE
$CH_2 = C(NMe_2)O^{-}$	_				
• -196 <sup>a</sup>	1569±21 <sup>g</sup>	1540±8	IMRE		79BAR/SCO
		1535±8	IMREO		79BAR/SCO
C <sub>4</sub> H <sub>8</sub> NO <sup>-</sup>				$\Delta_f H(AH) = -43 \pm 6$	74CHO/MEN
Me <sub>2</sub> C(NO)CH <sub>2</sub> <sup>-</sup> 40±34 <sup>a</sup>	1613±28 g	1586±25	IMRB		80NOE/NIB
 С <sub>4</sub> Н9 <sup>-</sup>			<u>"- 11 2 dani 11 dani </u>	$\Delta_f H(AH) = -135$	74SCO
Me <sub>3</sub> C				BDE(A-H) = 390±8	82MCM/GOL
* 67±9 a	1732±8	1701±10 <sup>h</sup>	Bran		84DEP/BIE
0.7	<del></del>		SI		72PAG
0.6			SI		69PAG/GOO
C <sub>4</sub> H <sub>9</sub> Br <sub>2</sub> -					
iBuBr··Br					
-374 <sup>c</sup>	54	27	TDAs		74DOU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>4</sub> H <sub>9</sub> Br <sub>2</sub> <sup>-</sup>						
tBuBr··Br						
–397 <sup>c</sup>		52	28	TDAs		74DOU
C <sub>4</sub> H <sub>9</sub> ClF						
tBuF· Cl						
* -614±18 °		56±8 <sup>g</sup>	30±8	IMRE		84LAR/MCM2
C <sub>4</sub> H <sub>9</sub> Cl <sub>2</sub> <sup>-</sup>						
tBuCl··Cl						
• -469±11 <sup>c</sup>		60±8 g	33±8	IMRE		84LAR/MCM2
$C_4H_9F_2^-$						
tBuF⋅⋅F						
* -673±15 <sup>c</sup>		93±8 g	64±8	IMRE		83LAR/MCM
C <sub>4</sub> H <sub>9</sub> O <sup>-</sup>					$\Delta_f H(AH) = -284 \pm 2$	77PED/RYL
iBuO <sup>-</sup>					$BDE(A-H) = 436\pm6$	/// CD////C
• -246±11 <sup>a</sup>	1.87±0.16	1 1568±9 g	1540±8	IMRE	, ,	79BAR/SCO
			1535±8	IMRE <sup>C</sup>		79BAR/SCO
C <sub>4</sub> H <sub>9</sub> O			,		$\Delta_f H(AH) = -275$	77PED/RYL
nBuO"					BDE(A-H)= 431±5	82MCM/GOL
* -234±10 a	1.78±0.15	1571±10 g	1543±8	<b>IMRE</b>		79BAR/SCO
		1569±12	1541±13 <sup>h</sup>	CIDC		83BOA/HOU
	1.9±0.1			EIAP	From nBuONO	68WIL∕HAM
	0.9		1505.0	SI		69PAG/GOO
			1537±8	IMRE		79BAR/SCO
C <sub>4</sub> H <sub>9</sub> O <sup>-</sup>					$\Delta_f H(AH) = -295$	77PED RYL
sBuO"	_				$BDE(A-H) = 441\pm4$	82MCM/GOL
• -259±10 a	1.95±0.14		1538±8	IMRE		86TAF
		1565±11	1538±13 <sup>h</sup>	CIDC IMRE <sup>0</sup>		83BOA/HOU
			1533±8	IMIKE-		79BAR/SCO
C <sub>4</sub> H <sub>9</sub> O <sup>-</sup>					$\Delta_f H(AH) = -313 \pm 3$	77PED/RYL
tBuO"					$BDE(A-H) = 440\pm4$	82MCM/GOL
	1.91±0.14 d		1540±8	IMRE		79BAR/SCO
	1.912±0.05	\$		LPES		82ELL/ENG
	1.87±0.01			PD		78JAN/ZIM
	< 1.87±0.04	•	1534±8	PD IMRE <sup>0</sup>		75REE/BRA 79BAR/SCO
C <sub>4</sub> H <sub>9</sub> O <sub>3</sub> - EtOH · · MeCO	_					
DIOIT MICOU	2	87±4	50±7	TDAs		86MEO/SIE2
C <sub>4</sub> H <sub>9</sub> O <sub>3</sub> -			···········			
C4119O3 HOH…iPrCO <sub>2</sub>	<del></del>					
	,					

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>4</sub> H <sub>9</sub> S <sup>-</sup>					$\Delta_f H(AH) = -97 \pm 1$ $BDE(A-H) = 364 \pm 10$	77PED/RYL
* -149±13 <sup>8</sup>	2.06±0.23	d 1477±12 g	1451±8	IMRE	BBE(A-1) = SOFE 10	86TAF
C <sub>4</sub> H <sub>9</sub> S <sup>-</sup>					$\Delta_f H(AH) = -88 \pm 1$ $BDE(A-H) = 364 \pm 10$	77PED RYL
* -138±13 <sup>a</sup>	2.04±0.23 2.030±0.02		1454±8	IMRE LPD	BDC(A-N) = 304±10	86TAF 80JAN/REE
C <sub>4</sub> H <sub>9</sub> S <sup>-</sup>					$\Delta_f H(AH) = -110 \pm 1$ BDE(A-H) = 364 \pm 9	77PED/RYL
* -165±13 <sup>a</sup>			1449±8	IMRE	, , , , , , , , , , , , , , , , , , , ,	79BAR/SCO
•	2.070±0.02	20	1458±8	LPD IMRE <sup>C</sup>		80JAN/REE 79BAR/SCO
C <sub>4</sub> H <sub>10</sub> BF <sub>2</sub> <sup>-</sup> Et <sub>2</sub> BF··F						, , , , , , , , , , , , , , , , , , ,
* ~740±44 °		243±21 <sup>g</sup>	215±21	IMRE		85LAR/MCM
–765 <sup>c</sup>		268		IMRB	F: iPr <sub>3</sub> B > Et <sub>2</sub> BF > Et <sub>3</sub> B	77MUR/BEA2
C <sub>4</sub> H <sub>10</sub> ClO- nBuOH··Cl-						
* -576±10 <sup>c</sup>		74±8 <sup>g</sup>	45±8	IMRE		84LAR/MCM2
C <sub>4</sub> H <sub>10</sub> ClO <sup>-</sup> tBuOH··Cl <sup>-</sup>						
* -599±12 <sup>c</sup>		59±8 76±8 <sup>g</sup>	46±8 46±8	TDAs IMRE		71YAM/KEB 84LAR/MCM2
C <sub>4</sub> H <sub>10</sub> FO <sup>-</sup>						
* -658±11 °		135±8 <sup>g</sup>	103±8	IMRE		83LAR/MCM
C <sub>4</sub> H <sub>10</sub> FO <sup>-</sup>						
• -701±13 °		139±8 <sup>g</sup>	107±8	IMRE	•	83LAR/MCM
C <sub>4</sub> H <sub>10</sub> IO <sup>-</sup> tBuOH··I <sup>-</sup>						
*		51±4	27±9	TDAs		84CAL/KEB
C <sub>4</sub> H <sub>10</sub> NO <sup>-</sup> Et <sub>2</sub> NO <sup>-</sup>				Est	$\Delta_f H(AH) = -36 \pm 13$ $BDE(A-H) = 291 \pm 8$	78CAC/LIS
	0.54±0.20 °	1551±11 <sup>g</sup>	1523±8 1520±8	IMRE IMRE <sup>0</sup>		83BAR/BAS 83BAR/BAS
C <sub>4</sub> H <sub>11</sub> O <sub>2</sub> - EtOH · · EtO-		*****				
		115±4	82±7	TDEq		86MEO/SIE2
-507±21 <sup>c</sup>		86±10 g	59±7 The difference be	IMRE	CAL/ROZ and 86MEO/SIE2 has not been resolved.	84CAL/ROZ

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdots Y^-)$ eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>4</sub> H <sub>11</sub> O <sub>2</sub> <sup>-</sup> MeOH··nPrO <sup>-</sup> -496±21 c	83±10 g	55±8	IMRE		84CAL/ROZ
470121			INITE		SICALINOZ
$C_4H_{11}Si^ Me_3SiCH_2^ -102\pm26^{\ a} \ 0.7\pm0.3^{\ d}$	1661±23 <sup>g</sup>	1635±21	IMRB	$\Delta_f H(AH) = -233\pm3$ $BDE(A-H) = 415\pm8$	<i>83STE</i> <i>83STE2</i> 84DEP/DAM
C <sub>4</sub> H <sub>12</sub> FSi <sup>-</sup> Me <sub>4</sub> Si··F					
• -607±13 °	125±8 <sup>g</sup>	99±8	IMRE		85LAR/MCM
C <sub>5</sub> ClFeO <sub>5</sub> - Fe(CO) <sub>5</sub> ··Cl			•		**************************************
-1053±16 °	58±13 g	33±13	IMRB		85LAN/SAL
C <sub>5</sub> CrO <sub>5</sub> <sup>-</sup> Cr(CO) <sub>5</sub> <sup>-</sup>					
>2.3			IMRB		85SAL/LAN
C <sub>5</sub> FFeO <sub>5</sub> - Fe(CO) <sub>5</sub> ··F					
-1188±13 <sup>c</sup>	171±8 <sup>g</sup>	144±8	IMRE		85LAN/SAL
C <sub>5</sub> F <sub>6</sub> O <sub>3</sub> <sup>-</sup> hexafluoroglutaric anhydric	ie <sup></sup> ·		1 0 100		
1.5±0.2			NBIP		74COO/COM
C <sub>5</sub> F <sub>9</sub> <sup>-</sup> C <sub>5</sub> F <sub>9</sub> <sup>-</sup> -2017±73 <sup>b</sup> 4.6±0.5			EIAP	$\Delta_f H(A) = -1573\pm29$ From n-C <sub>6</sub> F <sub>14</sub>	<i>83SPY SAU</i> 83SPY/SAU
>3.1±0.3			EIAP	From c-C <sub>4</sub> F <sub>6</sub> (CF <sub>3</sub> ) <sub>2</sub>	72THY
3.1			EIAP	From c-C <sub>4</sub> F <sub>6</sub> (CF <sub>3</sub> ) <sub>2</sub>	70LIF/PEE
C <sub>5</sub> F <sub>9</sub> O <sub>2</sub> - FCOCF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CFO··F	•				
•		192±19	IMRE		84LAR/MCM
C <sub>5</sub> F <sub>10</sub> <sup>-</sup> C <sub>5</sub> F <sub>10</sub> <sup>-</sup> ·				$\Delta_f H(A) = -2007 \pm 21$	83SPY/SAU
<-2508±64 b> 5.2±0.5			EIAP	From n-C <sub>5</sub> F <sub>12</sub>	83SPY/SAU
C <sub>5</sub> F <sub>11</sub> <sup>-</sup> (CF <sub>3</sub> ) <sub>3</sub> CCF <sub>2</sub> <sup>-</sup>					
4.7±0.3			EIAP	From neo-C <sub>5</sub> F <sub>12</sub>	85SPY/HUN
C <sub>5</sub> F <sub>11</sub> <sup>-</sup> C <sub>2</sub> F <sub>5</sub> (CF <sub>3</sub> ) <sub>2</sub> C <sup>-</sup>		Charles and I will receive the a decrease of the literature of the			
>4.2±0.3			EIAP	From i-C <sub>5</sub> F <sub>12</sub>	85SPY/HUN

Table 2. Negative Ion Table - Continued

		Table	2. Negative io	ii Table	- Continued	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>5</sub> F <sub>11</sub> - C <sub>5</sub> F <sub>11</sub> -						
	>4.5±0.2			EIAP	From n-C <sub>5</sub> F <sub>12</sub>	83SPY/SAU
C <sub>5</sub> MnO <sub>5</sub>						
Mn(CO)5			1309±17	IMRB	$\Delta_f H(A) = -740 \pm 10$	<i>82CON/ZAF</i> 87STE/BEA
C <sub>5</sub> N <sup>-</sup>				Est2	$\Delta_f H(AH) = 577 \pm 21$	
N=CC=CC=C <sup>-</sup> 682	2.3	1643±21 °		EIAP	BDE(A-H) = 552±21 From HC≥C-(C≥C) <sub>2</sub> -C≥N	61DIB/REE
C <sub>5</sub> N <sub>3</sub>						
(NC) <sub>2</sub> C = CCN	3.8±0.5				_	
	3.8±0.3			EIAP	From tetracyanoethylene	72BRI/OLS
C5HFeO5						
Fe(CO) <sub>5</sub> ··H <sup></sup> -858 <sup>c</sup>		235±13		IMRB		OST ANUCAT
	· · · · · · · · · · · · · · · · · ·		W. A. San			85LAN/SAL
C5HFeO6	_					
Fe(CO) <sub>5</sub> ··OH -1142 <sup>c</sup>		237±17 <sup>g</sup>	196±17	IMRB		DET ANUCAT
<-1075		20,11,	170117	IMRB		85LAN/SAL 84LAN/LEE
C-U-E-	· · · · · · · · · · · · · · · · · · ·					
C <sub>5</sub> H <sub>3</sub> F <sub>2</sub> <sup>-</sup> difluorocycloper	ntadienide	<del>-</del>				
<9				IMRB	$CH_2 = CHCH_2^- + C_2F_4 \rightarrow$	79DAW/NOE
C <sub>5</sub> H <sub>4</sub> <sup>-</sup>					$\Delta_f H(AH) = 217 \pm 10$	82MCM/GOL
cyclopentadieny	lide <sup>-</sup> ·	_		D-EA	BDE(A-H)= 466±46	
274±27 <sup>a</sup>		1587±16 <sup>g</sup>	1556±13	IMRB		80MCD/CHO
<243±19			1546 10	EIAP		72DID/HAR
			1546±13	IMRBO		80MCD/CHO
$C_5H_4F_3O_2^ CF_3COCH = C($	Ma)O=				$\Delta_f H(AH) = -1003 \pm 4$	84ERA KOL
C13COC11=C(	MejO	1374±17 <sup>g</sup>	1347±8	IMRE		81FUJ/MCI
-1130±21 <sup>a</sup>		1374±17 g	1348±8	IMRE		78CUM/KEB
C <sub>5</sub> H <sub>4</sub> F <sub>6</sub> NO					-	
(CF <sub>3</sub> ) <sub>2</sub> C(Me)OI	H··CN¯					
* -1609±28 <sup>c</sup>		108±15 <sup>g</sup>	74±10	IMRE		87LAR/MCM
C <sub>5</sub> H <sub>4</sub> N <sup>-</sup>				,	$\Delta_f H(AH) = 140\pm 1$	79KUD KUD
pyridinide a		1710 0	1600.0			
* 250±3 <sup>a</sup>		1640±2	1602±2 <1574±8	TDEq	O denminates	87MEO
2	.41±0.03		~ IJ/4I0	IMRB SI	O deprotonates	78BRU/FER 76FAI/JOY
-				J.		/UFAI/JU I

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>5</sub> H <sub>4</sub> O <sup>-</sup> . C <sub>5</sub> H <sub>4</sub> O <sup>-</sup> . 84±21			From benzoquir	Est2 NBAP	$\Delta_f H(A) = -35\pm35$ sibly cyclopentadienone ?	75COO/NAF
 C <sub>5</sub> H <sub>5</sub> <sup>-</sup>			-			
cyclopentadienie	đe <sup></sup>				$\Delta_f H(AH) = 131 \pm 4$ $BDE(A-H) = 329 \pm 8$	77PED/RYL
	1.67±0.21	d <sub>1481±12</sub> g	1455±8	IMRE	BDE(A-F)= 329±0	82MCM/GOL
	1.786±0.02		145516	LPES		79BAR/SCO
	2110020.01	1485±12 <sup>g</sup>	1459±8	IMRE		77ENG/LIN2
	1.839±0.03		145710	LPD		78CUM/KEB
	< 2.2±0.3	,,,		EIAP	From cyclopentadiene	73RIC/STE
.,20	- 2.220.5		1464±8	IMRE		72DID/HAR
	<del></del>		110140		***	79BAR/SCO
C <sub>5</sub> H <sub>5</sub> N <sub>2</sub> <sup>−</sup> pyrrole · · CN <sup>−</sup>				•		
* 101±24 °		82±15 g	51±10	IMRE		87LAR/MCM
C <sub>5</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup>				<del></del>		
EtOCOCN ·· CN	<b>7</b> -					
•		73±15 <sup>g</sup>	42±10	IMRE		87LAR/MCM
C <sub>5</sub> H <sub>6</sub> Cl <sup>-</sup>			-			-
cyclopentadiene	··CI¯		< 10	2727-		0055577
			< 10	TDEq		82FRE/IKU
C <sub>5</sub> H <sub>6</sub> NO				Est2	$\Delta_f H(AH) = 21 \pm 13$	
Me2NCOC≡C					BDE(A-H) = 552±21	
• 8±22 a		1517±10 <sup>g</sup>	1484±8	IMRE		86TAF
C5H7 <sup>-</sup>					$\Delta_f H(AH) = 75 \pm 1$	77PED/RYL
$CH_2 = C(CH = C$	H <sub>2</sub> )CH <sub>2</sub>	•			•	
159±24 <sup>a</sup>		1614±23 g	1586±21	IMRB	Acid: isoprene	79BAR/MCI
C <sub>5</sub> H <sub>7</sub> <sup>-</sup>					$\Delta_f H(AH) = 144 \pm 4$	79ROGI DAG
nPrC≡C					BDE(A-H)= 552±21	
* 203±19 a 2	.85±0.37 <sup>d</sup>	1589±15 g	1556±8	<b>IMRE</b>		79BAR/SCO
			1551±8	IMRE <sup>0</sup>		79BAR/SCO
5H7 <sup>-</sup>	***************************************				$\Delta_f H(AH) = 106$	77PED/RYL
pentadienide					BDE(A-H)= 318±13	82MCM/GOL
* 118±16 a 0	.91±0.03	1542±15 e	1522±22 h	PD	Acid: 1,4-pentadiene	78ZIM/GYG
5H7N2						
3,5-diMe-pyrazo	lide -					
•		1481±11 g	1450±8	IMRE		86TAF
5H7O-					$\Delta_{f}H(AH) = -194 \pm 2$	77PED/RYL
cyclopentanone e	nolate <sup>-</sup>					
. 1	.62±0.06			PD		

Table 2. Negative Ion Table - Continued

		·			
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
$C_5H_7O_2^-$ McCOCH = C(Mc)O $^-$				$\Delta_f H(AH) = -384 \pm 2$	79HACIPIL
* -472±11 <sup>a</sup>	1438±10 g	1408±8	IMRE		78CUM/KEB
	1438±10 g	1409±8	IMRE		86TAF
$C_5H_7O_3^-$ $MeCO_2CH = C(Me)O^-$			Est2	$\Delta_f H(AH) = -573 \pm 13$ BDE(A-H) = 377 \pm 8	
* -638±25 a	1466±12 g	1436±8	IMRE		78CUM/KEB
C <sub>5</sub> H <sub>8</sub> Cl <sup>-</sup>	CIT.				
CH <sub>2</sub> =CHCH <sub>2</sub> CH=CH <sub>2</sub>	.··ci	15	TDEq		82FRE/IKU
C <sub>5</sub> H <sub>8</sub> ClO <sub>2</sub> - MeCOCH <sub>2</sub> COMe··Cl					
		56	TDEq		82FRE/IKU
C <sub>5</sub> H <sub>9</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -244 \pm 4$	P1. 11. 11.
Me <sub>2</sub> C(CHO)CH <sub>2</sub> <sup>-</sup> -153±25 <sup>a</sup>	1621±21 <sup>g</sup>	1594±17	IMRB		80NOE/NIB
C <sub>5</sub> H <sub>9</sub> O <sup>-</sup>				$\Delta_f H(AH) = -262 \pm 1$	77PED/RYL
$Me_2C = C(Me)O^-$ • -257±13 a 1.46±0.26	d 1535±12 g	1508±8	IMRE	$BDE(A-H) = 364 \pm 13$	78CUM/KEB
C <sub>5</sub> H <sub>9</sub> O <sup>-</sup>				$\Delta_f H(AH) = -259 \pm 1$	77PED/RYL
MeCH = $C(Et)O^{-}$ * $-246\pm13^{a}$ 1.65 $\pm0.30^{o}$	d 1542±12 g	1610 - 0	WADE.	BDE(A-H)= 390±17	
* 1.68±0.05	1342±12 ¢	1512±8	IMRE PD		78CUM/KEB 77ZIM/REE
C <sub>5</sub> H <sub>9</sub> O <sub>2</sub> -				$\Delta_f H(AH) = -515\pm6$	77PED/RYL
iBuCO <sub>2</sub> <sup></sup> * -596±17 <sup>a</sup> 3.17±0.20 <sup>c</sup>	i <sub>1449±11</sub> g	1420±8	IMRE	BDE(A-H) = 444±8	86TAF
C <sub>5</sub> H <sub>9</sub> O <sub>2</sub> -				$\Delta_{\ell}H(AH) = -490 \pm 2$	77PED/RYL
nBuCO <sub>2</sub> — * -572±11 <sup>a</sup> 3.2±0.2 <sup>d</sup>	1449±10	1419±12 <sup>h</sup>	CIDC	BDE(A-H)= `444±8	81MCL/CAM
C <sub>5</sub> H <sub>9</sub> O <sub>2</sub>	W.M		Est	$\Delta_f H(AH) = -512 \pm 4$	
tBuCO2				BDE(A-H)= 444±8	
• -600±15 <sup>a</sup> 3.25±0.20 <sup>c</sup>	1 1442±11 g	1412±8	IMRE		86TAF
C <sub>5</sub> H <sub>10</sub> ClO <sup>-</sup> Et <sub>2</sub> CO··Cl <sup>-</sup>					
* -545±10 °	59±8 g	34±8	IMRE		84LAR/MCM2
C <sub>5</sub> H <sub>10</sub> ClO					
tBuCHO · · Cl <sup>-</sup> * -534±14 <sup>c</sup>	63±8 <sup>g</sup>	35±8	IMRE		84LAR/MCM2

Table 2. Negative Ion Table - Continued

	Table	2. Negative io	n Table	- Continued	
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdots Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
C <sub>5</sub> H <sub>10</sub> FO <sup>-</sup> tBuCHO··F <sup>-</sup> • -596±15 <sup>c</sup>	103±8 <i>8</i>	70±8	IMRE		83LAR/MCM
C <sub>5</sub> H <sub>10</sub> IO <sub>2</sub> -					
tBúCO <sub>2</sub> H··I <sup>™</sup> • -765±9 <sup>c</sup>	64±4	37±9	TDAs		84CAL/KEB
C <sub>5</sub> H <sub>10</sub> NO <sup>-</sup> HN=C(tBu)O <sup>-</sup>			Est2	$\Delta_f H(AH) = -322 \pm 13$	
• -354±23 a	1499±11 g	1469±8	IMRE		86TAF
C <sub>5</sub> H <sub>10</sub> NO <sup>-</sup> tBuCH=NO <sup>-</sup>			Est -	$\Delta_f H(AH) = -135 \pm 8$	
• -147±23 <sup>a</sup>	1518±14 g	1489±10 1497±8	IMRE IMRE <sup>0</sup>	)	79BAR/SCO 79BAR/SCO
C <sub>5</sub> H <sub>10</sub> NO <sup>-</sup> tBuOH··CN <sup>-</sup>					
• -314±26 <sup>c</sup>	76±15 <sup>g</sup>	45±10	IMRE		87LAR/MCM
$C_5H_{10}NO_2^-$ $tBuCH = NO_2^-$			Est	$\Delta_f H(AH) = -189 \pm 4$	
• -233±16 a	1486±12 <sup>g</sup>	1458±8 1467±8	IMRE IMRE <sup>C</sup>	,	79BAR/SCO 79BAR/SCO
C <sub>5</sub> H <sub>11</sub> Br <sub>2</sub> <sup>-</sup> tBuCH <sub>2</sub> Br··Br <sup>-</sup>					
-418 °	60	29	TDAs		74DOU
C <sub>5</sub> H <sub>11</sub> O <sup>-</sup> Et <sub>2</sub> CHO <sup>-</sup>				$\Delta_f H(AH) = -316 \pm 1$ BDE(A-H) = 438 \pm 4	77PED RYL
• -286±12 a 2.0±0.2 d	1559±11 1556±10	1532±13 <sup>h</sup>	CIDC <sup>o</sup>		83BOA/HOU 83BOA/HOU
C <sub>5</sub> H <sub>11</sub> O <sup>-</sup> iPrCH(Me)O <sup>-</sup>			<del></del>	$\Delta_f H(AH) = -316 \pm 1$ $BDE(A-H) = 438 \pm 4$	77PED/RYL
* -285±13 <sup>a</sup> 2.0±0.2 <sup>d</sup>	1561±11 1556±10	1533±13 <sup>h</sup>	CIDC <sup>o</sup>	552p. 1y= 16621	83BOA/HOU 83BOA/HOU
C <sub>5</sub> H <sub>11</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -306 \pm 4$	
iPrCH <sub>2</sub> CH <sub>2</sub> O <sup>-</sup> • -274±15 <sup>a</sup> 1.9±0.2 <sup>d</sup>	1563±11	1535±13 <sup>h</sup>	CIDC	$BDE(A-H) = 436\pm4$	83BOA/HOU
	1559±10	1531±12 <sup>h</sup>	CIDCo		83BOA/HOU
C <sub>5</sub> H <sub>11</sub> O <sup>-</sup> nC <sub>5</sub> H <sub>11</sub> O <sup>-</sup>				$\Delta_f H(AH) = -297 \pm 2$ $BDE(A-H) = 436 \pm 4$	77PED/RYL
• -262±13 a 1.9±0.2 d	1564±11	1537±13 <sup>h</sup>	CIDC		83BOA/HOU
	1560±10		CIDCo		83BOA/HOU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>5</sub> H <sub>11</sub> O <sup>-</sup> tBuCH <sub>2</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -318\pm 2$ $BDE(A-H) = 428\pm 6$	82MCM/GOL
• -290±14 a	1.88±0.19	od 1559±12 g	1531±8	IMRE		79BAR/SCO
*	1.93±0.05			PD		78JAN/ZIM
	< 1.93±0.	06	1500.0	PD		75REE/BRA
			1528±8	IMRE		79BAR/SCO
C <sub>5</sub> H <sub>11</sub> O <sup>-</sup> tPnO <sup>-</sup>	_				$\Delta_f H(AH) = -331 \pm 1$ $BDE(A-H) = 440 \pm 4$	77PED/RYL
* -300±13 <sup>a</sup>	2.0±0.2 <sup>đ</sup>		1533±13 <sup>h</sup>	CIDC		83BOA/HOU
		1556±10		CIDC		83BOA/HOU
C <sub>5</sub> H <sub>11</sub> S <sup>-</sup> nC <sub>5</sub> H <sub>11</sub> S <sup>-</sup>					$\Delta_f H(AH) = -110 \pm 1$ BDE(A-H) = 364 \pm 10	77PED/RYL
* -165±13 a	2.090±0.0	20 1475 <sup>e</sup>		LPD	DD 2 (11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	80JAN/REE
C <sub>5</sub> H <sub>11</sub> S <sup>-</sup> tBuCH <sub>2</sub> S <sup>-</sup>		······································			$\Delta_f H(AH) = -129 \pm 1$ $BDE(A-H) = 364 \pm 10$	77PED/RYL
* -188±13 <sup>a</sup>	2.13±0.23	d 1472±12 g	1445±8	IMRE	222(111)	86TAF
C <sub>5</sub> H <sub>12</sub> FSi <sup>-</sup> c-(CH <sub>2</sub> ) <sub>3</sub> Si(M	(e)a··F		****			
-544±23 °	,2 -	158±9 g	130±9	IMRE		81SUL/DEP
C <sub>5</sub> H <sub>13</sub> O <sub>2</sub> - EtOH··nPrO	_					
-531±21 <sup>c</sup>		85±10 <sup>g</sup>	57±8	IMRE		84CAL/ROZ
C <sub>5</sub> H <sub>13</sub> O <sub>2</sub> - McOH··tBuC	)-					
		107±4	72±7	TDEq		86MEO/SIE2
−556±23 <sup>c</sup>		79±10 g	51±7	IMRE		84CAL/ROZ
C <sub>5</sub> H <sub>15</sub> Si <sup>-</sup> nPnSiH <sub>3</sub> ··H <sup>-</sup>						
		45±23		IMRB		86HAJ/SQU
C <sub>6</sub> Br <sub>4</sub> O <sub>2</sub> -						
bromanil.				Est	$\Delta_f H(A) = 18 \pm 21$	
−218±40 <sup>b</sup>	2.4±0.2			NBIP	•	78COO/FRE
C <sub>6</sub> Cl <sub>4</sub> O <sub>2</sub> -						
chloranil"					$\Delta_f H(A) = -186 \pm 12$	77PED RYL
* -454±21 b	2.78±0.10			TDEq		87KEB/CHO
	2.68±0.11			IMRE		85GRI/CAL
	2.67±0.05			IMRE		85FUK/MCI
	2.8±0.2			NBIP		78COO/FRE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A)	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{afi}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> Cl <sub>5</sub> <sup>-</sup> C <sub>6</sub> Cl <sub>5</sub> <sup>-</sup>					$\Delta_f H(AH) = -40\pm 9$ BDE(A-H) = 464±13	85PLA\SIM2
0 3	2.8	1510±13 <sup>c</sup>		SI	355,000	69PAG/GOO
C <sub>6</sub> F <sub>4</sub> O <sub>2</sub> -						
fluoranil -	L			Est	$\Delta_f H(A) = -816 \pm 41$	
* -1076±51				TDEq		87KEB/CHO
-1043±46	b 2.36±0.05			IMRE		85FUK/MCI
	2.9±0.2			NBIP		78COO/FRE
	2.3		W	SI		69PAG/GOO
C <sub>6</sub> F <sub>5</sub> <sup>-</sup>					$\Delta_f H(AH) = -806 \pm 7$	77PED/RYL
C <sub>6</sub> F <sub>5</sub>		_	•		$BDE(A-H) = 487 \pm 8$	82MCM/GOL
−797±34 <sup>b</sup>	2.7±0.2	1539±28 <sup>e</sup>	1506±29 h	~	From perfluorobenzene	82COM/REI
<del>-4</del> 64	0.7			Endo	$I^- + C_6 F_6 \rightarrow$	73LIF/TIE
	2.7			SI		69PAG/GOO
C <sub>6</sub> F <sub>5</sub> O <sup>-</sup> pentafluoroph	anovida"				$\Delta_f H(AH) = -957 \pm 2$	77PED RYL
pentantioropi	3.06±0.09			ECD		OATTED STEEL
<-857±8	J.00±0.07	< 1630±10 f			$HO^- + C_6F_6 \rightarrow$ , acidity probably ca. 1340 kJ	84HER/WEN 75BRI/RIV
			** ***			/SBIG/IGV
C <sub>6</sub> F <sub>6</sub> -					A 1//A)	
C <sub>6</sub> F <sub>6</sub>	0.52±0.10			(III) 13	$\Delta_f H(A) = -946 \pm 8$	79PR#SAP
-990±18	0.52±0.10			TDEq		87KEB/CHO
	1.8±0.3			TDEq EnCT		86CHO/GRI
	1.20±0.07			SI		73LIF/TIE 69PAG/GOO
				***		07110,000
C <sub>6</sub> F <sub>10</sub> <sup>-</sup> perfluorocyclo	hevene":				A 1//A)	70771040
<-2504±37	b 1.4+0.3			EnCT	$\Delta_f H(A) = -2369 \pm 8$	79PR∥SAP
	- 1112010			LIICI		73LIF/TIE
C <sub>6</sub> F <sub>11</sub> - C <sub>6</sub> F <sub>11</sub> -						
<b>5 11</b>	>4.2±0.2			EIAP	From c-C <sub>4</sub> F <sub>6</sub> (CF <sub>3</sub> ) <sub>2</sub>	72THY
	3.5			EIAP	From c-C <sub>6</sub> F <sub>12</sub>	70LIF/PEE
C <sub>6</sub> F <sub>13</sub> - C <sub>6</sub> F <sub>13</sub> -						***************************************
-0- 13	>4.6±0.2			EIAP	From n-C <sub>6</sub> F <sub>14</sub>	83SPY/SAU
C <sub>6</sub> N <sub>4</sub> <sup>-</sup>						
tetracyanoethy	lene <sup></sup>				$\Delta_f H(A) = 705 \pm 6$	77PED/RYL
• 400±25 b	3.17±0.20			TDEq	•	87KEB/CHO
	3.17±0.20			TDEq		86CHO/KEB
	2.300±0.30	0		LPD		76LYO/PAL
	2.03±0.05			PD		73LYO/PAL
	1.700±0.30	0		LPD		75LYO/PAL
	2.88±0.06			SI		67FAR/PAG

Table 2. Negative Ion Table - Continued

		a. regative to		- Continued	
	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
C <sub>6</sub> HCl <sub>3</sub> O <sub>2</sub> -					
triCl-benzoquinone-			Est2	$\Delta_f H(A) = -180 \pm 13$	
• -423±17 b 2.52±0.05			IMRE		85FUK/MCI
C <sub>6</sub> HF <sub>4</sub> O <sup>-</sup>			Est2	$\Delta_f H(AH) = -764 \pm 13$	
2,3,5,6-tetrafluorophenoxic	le <sup>-</sup>			BDE(A-H)= 385±17	
2.75±0.09			ECD		84HER/WEN
C <sub>6</sub> H <sub>2</sub> Cl <sub>2</sub> O <sub>2</sub> <sup>-</sup>					
2,5-diCl-benzoquinone			Est2	$\Delta_f H(A) = -174 \pm 13$	
* -409±22 b 2.43±0.10			TDEq	• • •	87KEB/CHO
2.29±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>2</sub> Cl <sub>2</sub> O <sub>2</sub> -					
2,6-diCl-benzoquinone				$\Delta_f H(A) = -174 \pm 12$	77PED/RYL
* -414±21 <sup>b</sup> 2.48±0.10			TDEq	•	87KEB/CHO
2.39±0.11			IMRE		85GRI/CAL
2.40±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>2</sub> Cl <sub>3</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -164 \pm 8$	
3,4,5-triCl-phenoxide				$BDE(A-H) = 362 \pm 13$	
* -310±21 <sup>a</sup> 3.00±0.26 <sup>d</sup>	1384±12 <sup>g</sup>	1355±8	IMRE		81FUJ/MCI
C <sub>6</sub> H <sub>2</sub> FO <sub>2</sub> -			Est2	$\Delta_f H(AH) = -387 \pm 13$	
fluorobenzoquinonide 2.4±0.1			SI		CCTA D MAC
<i>a.</i> 710.1					66FAR/PAG
$C_6H_2N_3O_7$			Est2	$\Delta_f H(AH) = -159 \pm 21$	
2,4,6-triNO <sub>2</sub> -phenoxide				$BDE(A-H) = 381 \pm 17$	
<-365±25 <sup>a</sup>	< 1324±4 g	<1293	IMRB	I deprotonates	74DZI/CAR
C <sub>6</sub> H <sub>3</sub> CINO <sub>3</sub> <sup>-</sup>			Est2	$\Delta_f H(AH) = -151 \pm 17$	
2-Cl-4-NO <sub>2</sub> -phenoxide	_			BDE(A-H)= 381±17	
* -328±28 <sup>a</sup>	1353±11 <sup>g</sup>	1323±8	IMRE		86TAF
C <sub>6</sub> H <sub>3</sub> Cl <sub>2</sub> NO <sub>2</sub> <sup>-</sup>				_	
2,3-diCl-nitrobenzene			Est2	$\Delta_f H(A) = 3 \pm 8$	
* -116±13 <sup>b</sup> 1.23±0.05			IMRE	•	85FUK/MCI
C <sub>6</sub> H <sub>3</sub> Cl <sub>2</sub> NO <sub>2</sub>					
3,4-diCl-nitrobenzene			Est	$\Delta_f H(A) = 8 \pm 8$	
* -125±13 b 1.38±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>3</sub> Cl <sub>2</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -153\pm 8$	
3,5-diCl-phenoxide				$BDE(A-H) = 362\pm13$	
* -284±19 <sup>a</sup> 2.85±0.24 <sup>d</sup>	1399±11 <sup>g</sup>	1370±8	IMRE		81FUJ/MCI
C <sub>6</sub> H <sub>3</sub> FO <sub>2</sub>					
fluorobenzoquinone"			Est2	$\Delta_f H(A) = -387 \pm 13$	
1.5±0.2			SI	• • •	66FAR/PAG

Table 2. Negative Ion Table - Continued

			2. Negative Ioi			
Ion $\Delta_f H(A^-)$ EA( $\Delta_f H(X \cdot Y^-)$ eV		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> H <sub>3</sub> F <sub>2</sub> - m-difluorophenide	-				$\Delta_f H(AH) = -309 \pm 1$	77PED/RYL
<-264±3 <sup>a</sup>		<1576±1 <sup>g</sup>	<1543	IMRB	< iPrOH	75BRI/RIV
C <sub>6</sub> H <sub>3</sub> F <sub>2</sub> - o-difluorophenide-					$\Delta_f H(AH) = -294 \pm 1$ BDE(A-H) = 460 \pm 13	77PED/RYL
-242±18 <sup>a</sup> 2.0±	0.3 <sup>d</sup>	1582±16 <sup>g</sup>	1547±13	IMRB	Between EtO <sup>+</sup> , iPrO <sup>+</sup>	75BRI/RIV
C <sub>6</sub> H <sub>3</sub> F <sub>2</sub> - p-difluorophenide-					$\Delta_f H(AH) = -307 \pm 1$ $BDE(A-H) = 460 \pm 13$	77PED/RYL
-247±16 <sup>a</sup> 1.9±	0.3 đ	1590±15 g	1555±13	IMRB	< McOH, ≤ EtOH	75BRI/RIV
C <sub>6</sub> H <sub>3</sub> FeO <sub>6</sub>		***************************************				
Fe(CO) <sub>5</sub> ··OMe <sup></sup> -1095±37 <sup>c</sup>		188±25 <sup>g</sup>	149±25	IMRB		85LAN/SAL
C <sub>6</sub> H <sub>3</sub> N <sub>3</sub> O <sub>6</sub> <sup>-</sup> 1,3,5-trinitrobenzen -191 b 2.6	e <sup></sup>			SI	$\Delta_f H(A) = 62 \pm 2$	77PED/RYL 69PAG/GOO
С <sub>6</sub> H <sub>3</sub> O <sub>2</sub> -					$\Delta_f H(AH) = -123 \pm 3$	77PED RYL
benzoquinonide 2.00	±0.04		<1607	IMRB SI		87JOH/SPE 66FAR/PAG
C <sub>6</sub> H <sub>4</sub> <sup>-</sup> o-benzyne <sup>-</sup> · • 440±22 b 0.560 <433	)±0.010	)		LPES IMRB	$\Delta_f H(A) = 494\pm21$ O <sup>-</sup> + C <sub>6</sub> H <sub>6</sub> \rightarrow , D label indicates ortho loss	80POL/HEH 86LEO/MIL 78BRU/FER
C <sub>6</sub> D <sub>4</sub> <sup>-</sup> o-benzyne-d <sub>4</sub> <sup>-</sup> · 0.555	1±0.010	)		LPES		86LEO/MIL
C6H4BrNO2 <sup>-</sup> mBr-nitrobenzene <sup>-</sup> -38±14 b 1.32±				Est TDEq	$\Delta_f H(A) = 90 \pm 4$	87KEB/CHO
C <sub>6</sub> H <sub>4</sub> BrNO <sub>2</sub> <sup>-</sup> oBr-nitrobenzene <sup>-</sup> · · -21±18 b 1.17±	<b>:</b> 0.10			Est2 TDEq	$\Delta_f H(A) = 92 \pm 8$	87KEB/CHO
C <sub>6</sub> H <sub>4</sub> BrNO <sub>2</sub> <sup>-</sup> pBr-nitrobenzene <sup>-</sup> · -35±14 b 1.29±	<b>:</b> 0.10			Est TDEq	$\Delta_f H(A) = 90\pm 4$	87KEB/CHO
C <sub>6</sub> H <sub>4</sub> Cl <sup>-</sup>					$\Delta_f H(AH) = 54 \pm 1$	85PLA/SIM
chlorophenide 1.6±0	<sub>0.4</sub> d	1620±23 g	1586±21	IMRB	BDE(A-H)= 460±13	79BAR/MCI

Table 2. Negative Ion Table - Continued

	Table.	2. Regative to	1 Table	- Continued		
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Metho	i	Comment	Reference
C6H4CIF2						
m-C <sub>6</sub> H <sub>4</sub> F <sub>2</sub> ··Cl						
* -598±11 °	61±8 <sup>g</sup>	33±8	IMRE	<b>;</b>		84LAR/MCM2
		32±4	TDE			82FRE/IKU
C <sub>6</sub> H <sub>4</sub> ClF <sub>2</sub> -						
o-C <sub>6</sub> H <sub>4</sub> F <sub>2</sub> ··Cl	~					
* -581±11 <sup>c</sup>	60±8 g	33±8	IMRE			84LAR/MCM2
C <sub>6</sub> H <sub>4</sub> CIF <sub>2</sub>						
$p-C_6H_4F_2\cdot\cdot Cl^-$	6					
* -592±11 <sup>c</sup>	58±8 g	31±8	IMRE			84LAR/MCM2
C <sub>6</sub> H <sub>4</sub> CINO <sub>2</sub> -						
mCl-nitrobenzene			Est	$\Delta_f H(A) = 38 \pm 8$		
* -85±18 b 1.28±0.10			TDEq			87KEB/CHO
1.22±0.11			IMRE			85GRI/CAL
1.20±0.05			IMRE			85FUK/MCI
C <sub>6</sub> H <sub>4</sub> CINO <sub>2</sub> -						
oCl-nitrobenzene-			Est	$\Delta_f H(A) = 42 \pm 4$		
• -68±14 b 1.14±0.10			TDEq			87KEB/CHO
1.08±0.11			IMRE			85GRI/CAL
1.05±0.05			IMRE			85FUK/MCI
C <sub>6</sub> H <sub>4</sub> CINO <sub>2</sub> -						
pCl-nitrobenzene			Est	$\Delta_f H(A) = 38 \pm 8$		
• -84±18 <sup>b</sup> 1.26±0.10			TDEq			87KEB/CHO
1.19±0.11			IMRE			85GRI/CAL
1.17±0.05			IMRE			85FUK/MCI
C <sub>6</sub> H <sub>4</sub> ClO				$\Delta_f H(AH) = -146 \pm$	8	77PED RYL
mCl-phenoxide				BDE(A-H)= 3621	<b>:8</b>	
* -245±29 <sup>a</sup> 2.52±0.30 <sup>c</sup>	1431±21 g	1402±8	IMRE			81FUJ/MCI
	1433±21 <sup>g</sup>	1404±8	IMRE			77MCM/KEB
C <sub>6</sub> H <sub>4</sub> ClO <sup>-</sup>			Est2	$\Delta_f H(AH) = -173 \pm$	17	***************************************
oCl-phenoxide				BDE(A-H)= 402±		
• -266±30 a 2.87±0.31 c	i 1437±13 g	1410±8	IMRE	• •		77MCM/KEB
* <2.58±0.08	3		PD			75RIC/STE2
C <sub>6</sub> H <sub>4</sub> ClO <sup>-</sup>				$\Delta_f H(AH) = -153 \pm 6$	8	77PED/RYL
pCl-phenoxide				$BDE(A-H) = 362\pm$		
* -248±18 <sup>a</sup> 2.47±0.23 <sup>c</sup>	1 1436±10 g	1407±8	IMRE		•	81FUJ/MCI
	1438±10 g	1409±8	IMRE			77MCM/KEB
C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub> <sup>-</sup>		-				
o-dichlorobenzene.				$\Delta_f H(A) = 33\pm 2$		85PLA\SIM
24 <sup>b</sup> 9.4			ECD	• • •		69STE/WEN
						•

Table 2. Negative Ion Table - Continued

	Zabic	2. Negative Ioi	Table	Continued	
	\H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> H <sub>4</sub> F <sup>-</sup> fluorophenide <sup>-</sup>				$\Delta_f H(AH) \approx -116 \pm 1$ BDE(A-H) = 460 \pm 13	77PED/RYL
-26±26 <sup>a</sup> 1.6±0.4 <sup>d</sup>	1620±25 g	1586±22	IMRB	352(1.17) 400210	75BRI/RIV
C <sub>6</sub> H <sub>4</sub> FNO <sub>2</sub> -					
mF-nitrobenzene			Est	$\Delta_f H(A) = -126 \pm 8$	
* · -245±18 b 1.23±0.10			TDEq		87KEB/CHO
1.18±0.11			IMRE		85GRI/CAL
1.15±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>4</sub> FNO <sub>2</sub> -					
oF-nitrobenzene-			Est	$\Delta_f H(A) = -118 \pm 8$	
• -221±18 b 1.07±0.10			TDEq		87KEB/CHO
1.02±0.11			IMRE		85GRI/CAL
1.04±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>4</sub> FNO <sub>2</sub>					
pF-nitrobenzene-			Est	$\Delta_f H(A) = -131 \pm 8$	
* -239±18 b 1.12±0.10			TDEq		87KEB/CHO
1.05±0.11			IMRE		85GRI/CAL
1.04±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>4</sub> FO <sup>-</sup>			Est	$\Delta_f H(AH) = -297 \pm 8$	
mF-phenoxide				BDE(A−H)= 362±8	
• -389±18 a 2.45±0.19 d	1438±10 g	1409±8	<b>IMRE</b>		81FUJ/MCI
	1441±10 g	1413±8	<b>IMRE</b>		77MCM/KEB
2.61±0.09	1422±17 °	1393±18 <sup>h</sup>	ECD		84HER/WEN
C <sub>6</sub> H <sub>4</sub> FO <sup>-</sup> oF-phenoxide <sup>-</sup>			Est2	$\Delta_f H(AH) = -285$	
•	1445±12 <sup>g</sup>	1418±8	IMRE		81FUJ/MCI
	1447±12 g	1420±8	IMRE		77МСМ/КЕВ
C <sub>6</sub> H <sub>4</sub> FO <sup>-</sup> pF-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -291 \pm 8$ $BDE(A-H) = 362 \pm 13$	
• -370±18 a 2.31±0.23 d	1451±10 g	1422±8	IMRE	•	81FUJ/MCI
	1455±10 g	1426±8	IMRE		77MCM/KEB
C <sub>6</sub> H <sub>4</sub> F <sub>2</sub> N <sup>-</sup> 2,4-diF-anilide <sup>-</sup>		1.224	Est	$\Delta_f H(AH) = -478 \pm 13$	, MI,
* -497±25 a	1510±12 g	1480±8	IMRE		79BAR/SCO
	<u> </u>	1480±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>6</sub> H <sub>4</sub> NO <sub>2</sub> -	· · · · · · · · · · · · · · · · · · ·		Est	$\Delta_f H(AH) = -91 \pm 8$	entered to the second s
pNO-phenoxide <sup>-</sup> • -246±19 <sup>a</sup>	1376±11 <sup>g</sup>	1345±8	IMRE		86TAF
C <sub>6</sub> H <sub>4</sub> NO <sub>3</sub> <sup>-</sup> mNO <sub>2</sub> -phenoxide <sup>-</sup>	***************************************		Est	$\Delta_f H(AH) = -113\pm 8$ $BDE(A-H) = 362\pm 8$	
• -244±19 a 2.85±0.20 d	1399±11 g	1370±8	IMRE		81FUJ/MCI
-27711/ 2.0010.20	1400±11 g	1370±8	IMRE		77MCM/KEB
	1400EII	13/110	HAHLT		MICHARD

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>6</sub> H <sub>4</sub> NO <sub>3</sub> - oNO <sub>2</sub> -pheno	oxide -			Est2	$\Delta_f H(AH) = -105 \pm 13$	
*			1379±8	IMRE		77MCM/KEB
C <sub>6</sub> H <sub>4</sub> NO <sub>3</sub> <sup>-</sup> pNO <sub>2</sub> -pheno	oxide -			Est	$\Delta_f H(AH) = -117 \pm 8$	
-276±19		1372±11 <sup>g</sup>	1343±8	IMRE		81FUJ/MCI
$C_6H_4N_2O_4^-$						
mNO2-nitro	benzene <sup>-</sup> ·				$\Delta_f H(A) = 59 \pm 1$	76FERIPIA
* -101±11	b 1.65±0.10			TDEq	,	87KEB/CHO
	1.57±0.11			IMRE		85GRI/CAL
-93±5 <sup>b</sup>	1.57±0.05			IMRE		85FUK/MCI
$C_6H_4N_2O_4^-$						
oNO <sub>2</sub> -nitrob	enzene"			Est2	$\Delta_f H(A) = 84 \pm 8$	
* -76±18 b	1.65±0.10			TDEq	•	87KEB/CHO
C <sub>6</sub> H <sub>4</sub> N <sub>2</sub> O <sub>4</sub>						
pNO <sub>2</sub> -nitrob	enzene-				$\Delta_f H(A) = 57 \pm 3$	76FERIPIA
* -136±13 <sup>t</sup>	2.00±0.10			TDEq	•	87KEB/CHO
	1.89±0.11			<b>IMRE</b>		85GRI/CAL
	1.89±0.05			IMRE		85FUK/MCI
C <sub>6</sub> H <sub>4</sub> N <sub>3</sub> -						
benzotriazolio	ic <sup>-</sup>	_				
*		1413±11 g	1382±8	IMRE		86TAF
$C_6H_4O_2^-$						
o-benzoquino	one"			Est2	$\Delta_f H(A) = -121 \pm 21$	
•	1.620±0.04	18		LPD		85MAR/COM
C <sub>6</sub> H <sub>4</sub> O <sub>2</sub> -						
p-benzoquing	one"				$\Delta_f H(A) = -123 \pm 3$	77PED/RYL
* -307±13 <sup>D</sup>	1.91±0.10			TDEq		87KEB/CHO
	1.81±0.11			IMRE		85GRI/CAL
	1.990±0.04	18		LPD		85MAR/COM
	1.83±0.05			IMRE		85FUK/MCI
	1.9±0.3			NBIP		75COO/NAF
	> 0.0			ES		70COL/CHR
	1.37±0.08			SI		66FAR/PAG
C <sub>6</sub> H <sub>5</sub> -					Δ <sub>f</sub> H(AH)= 83	77PED/RYL
phenide					BDE(A-H)= 464±8	82MCM/GOL
* 229±3 <sup>a</sup>	1.03±0.11 <sup>6</sup>	1677±2	1636±3	TDEq		86MEO/SIE
			1632±27	IMRB		79BAR/MCI
341±29				EIAP	From benzonitrile	86HEN/ILL2
	1.1±0.3 <sup>d</sup>	1665±25 g	1628±23	IMRB		71BOH/YOU
	2.36±0.04			SI		76FAI/JOY
	2.2			SI		72PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> H <sub>5</sub> BrCl <sup>-</sup> PhBr··Cl <sup>-</sup>	77.893.4				
		28	TDEq		82FRE/IKU
C <sub>6</sub> H <sub>5</sub> CIF					
PhF··CI <sup>-</sup>		25	TDEq		82FRE/IKU
C <sub>6</sub> H <sub>5</sub> CIFO				TO AND ALL TO A STATE OF THE ST	
pF-C <sub>6</sub> H <sub>4</sub> OH··Cl <sup></sup> * -629±18 <sup>c</sup>	110±8	81±8	TDEq		77CUM/FRE
C <sub>6</sub> H <sub>5</sub> CII <sup>-</sup>					
PhI··CI¯		30	TDEq		82FRE/IKU
C <sub>6</sub> H <sub>5</sub> CIN <sup>-</sup> mCl-anilide <sup>-</sup>			Est	$\Delta_f H(AH) = 55\pm 8$ $BDE(A-H) = 368\pm 13$	49-2
• 26±18 <sup>a</sup>	1502±10 g	1471±8	IMRE		79BAR/SCO
	***	1480±8	IMRE		79BAR/SCO
C <sub>6</sub> H <sub>5</sub> CIN <sup>-</sup>			Est	$\Delta_f H(AH) = 55\pm 8$	
pCl-anilide <sup>-</sup> • 33±18 <sup>a</sup>	1508±10 g	1477±8	IMRE	$BDE(A-H) = 368 \pm 13$	79BAR/SCO
		1482±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>6</sub> H <sub>5</sub> ClNO <sub>2</sub> - PhNO <sub>2</sub> ··Cl					
2		30	TDEq		82FRE/IKU
C <sub>6</sub> H <sub>5</sub> Cl <sub>2</sub> <sup>−</sup> PhCl··Cl <sup>−</sup>					
* -230±10 °	57±8 g	29±8	IMRE		84LAR/MCM2
	57±48	29±4 27	IMRE TDEq		84LAR/MCM4 82FRE/IKU
	P.M. P		TDEQ		62FRE/INU
C <sub>6</sub> H <sub>5</sub> Cl <sub>2</sub> O <sup>-</sup>					
pCl-C <sub>6</sub> H <sub>4</sub> OH··Cl <sup>-</sup> * -498±18 °	118±8	87±8	TDEq		77CUM/FRE
C <sub>6</sub> H <sub>5</sub> FN			Est	$\Delta_f H(AH) = -113 \pm 8$	
mF-anilide <sup>-</sup> • -132±19 <sup>a</sup>	1511±11 g	1481±8	IMRE	BDE(A-H)= 368±13	79BAR/SCO
		1489±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>6</sub> H <sub>5</sub> FN <sup>-</sup> oF-anilide <sup>-</sup>				Δ <sub>f</sub> H(AH)= -130±17 BDE(A-H)= 389±17	
• -143±29 a 1.91±0.30 d	1517±12 g	1487±8	IMRE	DDL(A-N) = SOSIN	79BAR/SCO
		1495±8	IMREO		79BAR/SCO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> H <sub>5</sub> FN				Est	$\Delta_f H(AH) = -109 \pm 8$	
pF-anilide		d			$BDE(A-H) = 368 \pm 13$	
• -115±19 a	1.62±0.24	d 1524±11 g	1494±8	IMRE		79BAR/SCO
			1499±8	IMRE <sup>C</sup>	)	79BAR/SCO
C <sub>6</sub> H <sub>5</sub> F <sub>5</sub> NS <sup>-</sup>						
mSF <sub>5</sub> -anilide		_			BDE(A-H)= 368±13	
*	2.76±0.24	d 1414±11 g	1383±8	IMRE		86TAF
C <sub>6</sub> H <sub>5</sub> F <sub>5</sub> NS <sup>-</sup>						
pSF <sub>5</sub> -anilide					$BDE(A-H) = 368 \pm 13$	
•	2.92±0.24	d 1399±11 g	1368±8	IMRE		86TAF
C <sub>6</sub> H <sub>5</sub> N <sup>-</sup>						· · · · · · · · · · · · · · · · · · ·
PhN-			486=	·		
* 263±26 <sup>a</sup>		1556±16 g	1527±13		Acidity near MeCN	81MCD/CHO
•	1.461±0.01	.3		LPD		84DRZ/BRA
			1532±13	IMRB <sup>o</sup>		81MCD/CHO
$C_6H_5NO_2^-$						
nitrobenzene"					$\Delta_f H(A) = 67 \pm 1$	77PED/RYL
* -30±11 b	1.01±0.10			TDEq		87KEB/CHO
	0.96±0.11			IMRE		85GRI/CAL
	0.97±0.05			IMRE		85FUK/MCI
	>0.7±0.2			EnCT		73LIF/TIE
	> 0.4			ES		66COM/CHR
	<1.1			IMRB	EA: < SO <sub>2</sub>	59HEN/MUC
$C_6H_5N_2O^-$						
$PhN = NO^{-}$						
<308±25				IMRB	Ph <sup>-</sup> + N <sub>2</sub> O →; thermochemical limit	77BIE/DEP
C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> -					$\Delta_f H(AH) = 62 \pm 2$	83NIS/SAK
mNO <sub>2</sub> -anilide	-				BDE(A-H)= 368±13	
• 6±13 a	2.14±0.24 d	i 1474±11 <sup>g</sup>	1443±8	IMRE		86TAF
C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup>					$\Delta_f H(AH) = 55 \pm 2$	83NIS/SAK
pNO <sub>2</sub> -anilide	•					
* -38±13 a		1437±11 g	1407±8	IMRE		86TAF
					$\Delta_f H(AH) = -96 \pm 1$	77PED/RYL
C <sub>6</sub> H <sub>5</sub> O <sup>-</sup>					·	
C <sub>6</sub> H <sub>5</sub> O <sup>-</sup>					$BDE(A-H) = 362\pm8$	82MCM/GOL
phenoxide -	2,21±0.19 <sup>d</sup>	1461±10 g	1432±8		BDE(A-H)= 362±8	<i>82MCMIGOL</i> 81FUJ/MCI
			1432±8	IMRE	BDE(A-H) = 362±8	81FUJ/MCI
phenoxide -	2.21±0.19 <sup>d</sup> < 2.36±0.06	5		IMRE PD	BDE(A-H) = 362±8	81FUJ/MCI 75RIC/STE2
phenoxide -			1437±8	IMRE PD IMRE	, , ,	81FUJ/MCI
phenoxide -		5	1437±8	IMRE PD IMRE	BDE(A-H) = $362\pm8$ lities $\Delta_{acid}$ H(ortho) = $1439\pm13$ kJ, (para) = $1423\pm8$ kJ	81FUJ/MCI 75RIC/STE2
phenoxide165±10 <sup>a</sup>		5	1437±8 86SHI/VOR: tau	IMRE PD IMRE tomer acid	lities Δ <sub>acid</sub> H(ortho) = 1439±13 kJ, (para) = 1423±8 kJ	81FUJ/MCI 75RIC/STE2 78CUM/KEB 79BAR/SCO
phenoxide165±10 a	< 2.36±0.06	5	1437±8 86SHI/VOR: tau	IMRE PD IMRE tomer acid	lities $\Delta_{ m acid}$ H(ortho) = 1439±13 kJ, (para) = 1423±8 kJ $_f$ H(AH)= $-274\pm2$	81FUJ/MCI 75RIC/STE2 78CUM/KEB
phenoxide 165±10 a  - C6H5O2  mOH-phenoxide	< 2.36±0.06	1466±10 g	1437±8 86SHI/VOR: tau 1441±8	IMRE PD IMRE tomer acid IMRE <sup>O</sup>	lities Δ <sub>acid</sub> H(ortho) = 1439±13 kJ, (para) = 1423±8 kJ	81FUJ/MCI 75RIC/STE2 78CUM/KEB 79BAR/SCO 79KUD/KUD
phenoxide165±10 a	< 2.36±0.06	1466±10 g	1437±8 86SHI/VOR: tau	IMRE PD IMRE tomer acid	lities $\Delta_{ m acid}$ H(ortho) = 1439±13 kJ, (para) = 1423±8 kJ $_f$ H(AH)= $-274\pm2$	81FUJ/MCI 75RIC/STE2 78CUM/KEB 79BAR/SCO

Table 2. Negative Ion Table - Continued

	Table	2. Negative io	n Table	- Continued	
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Υ)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>6</sub> H <sub>5</sub> O <sub>2</sub> <sup>-</sup> oOH-phenoxide <sup>-</sup>				$\Delta_f H(AH) = -272\pm 4$	79KUD KUD
•	1421±11 <sup>g</sup>	1392±8	IMRE		81FUJ/MCI
	1422±11 <sup>g</sup>	1393±8	IMRE		77MCM/KEB
C <sub>6</sub> H <sub>5</sub> O <sub>2</sub> -				$\Delta_f H(AH) = -264 \pm 2$	79KUD KUD
pOH-phenoxide <sup>-</sup> • -328±13 <sup>a</sup>	1466±11 g	1436±8	IMRE		81FUJ/MCI
C <sub>6</sub> H <sub>5</sub> S <sup>-</sup>				$\Delta_f H(AH) = 113\pm 1$	77PED RYL
thiophenoxide -				BDE(A-H) = 335±9	82MCM/GOL
* <2.47±0.06	> 1409±15 <sup>e</sup>		PD		75RIC/STE2
C <sub>6</sub> H <sub>6</sub> Cl <sup>-</sup> C <sub>6</sub> H <sub>6</sub> ··Cl <sup>-</sup>			_		
•	41 g	20±8	IMRE		84LAR/MCM2
		16	TDEq		82FRE/IKU
C <sub>6</sub> H <sub>6</sub> ClO <sup>-</sup>					
-432 °	109	72	TDAs		82FRE/IKU
-426±10 °	103±8	83±8	TDEq		77CUM/FRE
	81±8	62±8	TDAs		71YAM/KEB
C <sub>6</sub> H <sub>6</sub> FO <sup>-</sup>					
* -518±11 °	173±8 <sup>g</sup>	140±8	IMRE		83LAR/MCM
C <sub>6</sub> H <sub>6</sub> N <sup>-</sup>				$\Delta_f H(AH) = 87 \pm 1$	77PED/RYL
anilide -	,			$BDE(A-H) = 368\pm8$	82MCM/GOL
• 90±12 <sup>a</sup> 1.53±0.20 <sup>d</sup>		1502±8	IMRE		79BAR/SCO
* 1.704±0.030	)		LPD		84DRZ/BRA2
	****	1505±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>6</sub> H <sub>6</sub> NO				$\Delta_f H(AH) = -90 \pm 2$	86NUN  BAR
mNH <sub>2</sub> -phenoxide				$BDE(A-H) = 362\pm8$	
• -153±11 <sup>a</sup> 2.15±0.19 <sup>d</sup>		1438±8	IMRE		81FUJ/MCI
	1469±10 g	1441±8	IMRE		77MCM/KEB
C <sub>6</sub> H <sub>6</sub> NO			Est2	$\Delta_f H(AH) = -105 \pm 17$	
oNH <sub>2</sub> -phenoxide				BDE(A-H)= 391±17	
•		1428±8	IMRE		77MCM/KEB
C <sub>6</sub> H <sub>6</sub> NO <sup>-</sup> pNH <sub>2</sub> -phenoxide <sup>-</sup>				$\Delta_f H(AH) = -82\pm 2$ $BDE(A-H) = 368\pm 13$	86NUN BAR
• -137±11 <sup>a</sup>	1475±10 g	1446±8	IMRE	•	81FUJ/MCI
	1483±10 g	1454±8	IMRE		77MCM/KEB
C <sub>6</sub> H <sub>6</sub> N <sub>2</sub> O <sub>2</sub> -					
mNH2-nitrobenzene				$\Delta_f H(A) = 59 \pm 1$	77PED/RYL
* -33±11 b 0.95±0.10			TDEq		87KEB/CHO

Table 2. Negative Ion Table - Continued

	Table	2. Negative 10	n Table	- Continued	
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdots Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>6</sub> H <sub>7</sub> <sup>-</sup> 1,3-cyclohexadienide <sup>-</sup> 138±21 <sup>a</sup> 0.6±0.4 <sup>d</sup> 134±75	1562±21 g	1531±17	IMRB IMRB	$\Delta_f H(AH) = 106$ $BDE(A-H) = 305\pm21$ Between SiH <sub>4</sub> , tBuOH	77PED/RYL 82MCM/GOL 86LEE/SQU 78DEP/BIE
C <sub>6</sub> H <sub>7</sub> <sup>-</sup> 1-methylcyclopentadienic • 1.670±0.0			Est LPD	$\Delta_f H(AH) = 96\pm 4$	73RIC/STE
C <sub>6</sub> H <sub>7</sub> FN <sup>-</sup> PhNH <sub>2</sub> ··F <sup>-</sup> -292±11 c	131±8 <sup>g</sup>	98±8	IMRE		83LAR/MCM
C <sub>6</sub> H <sub>7</sub> O <sup>-</sup> cyclohexenone-4-enolate • -150±22 <sup>a</sup>	- 1496±10 <sup>g</sup>	1464±8 1473±8	Est2 IMRE IMRE	$\Delta_f H(AH) = -116 \pm 13$	86BAR/KIP 86BAR/KIP
C <sub>6</sub> H <sub>7</sub> O <sub>2</sub> <sup>−</sup> НОН · · РhO <sup>−</sup> −471±14 <sup>c</sup>	64±4	34±7	TDAs		86MEO/SIE2
C <sub>6</sub> H <sub>8</sub> B <sup>-</sup> MeB(CH = CH) <sub>2</sub> CH <sup>-</sup> 17±31 <sup>a</sup>	1402±18 <sup>g</sup>	1370±17	Est IMRB	$\Delta_f H(AH) = 146\pm13$ Acid: 3-methyl-3-bora-1,4-cyclohexadiene	<i>7</i> 7SUL
C <sub>6</sub> H <sub>9</sub> - cyclohexenide-				$\Delta_f H(AH) = -5$	77PED/RYL
82±25 <sup>a</sup>	1617±25 <sup>g</sup>	1586±21	IMRB		86LEE/SQU
C <sub>6</sub> H <sub>9</sub> <sup>-</sup> tBuC=C <sup>-</sup> • 157±15 <sup>a</sup> 2.93±0.34	d <sub>1582±12</sub> g	1549±8 1544±8	IMRE IMRE <sup>0</sup>	$\Delta_f H(AH) = 106 \pm 3$ $BDE(A-H) = 552 \pm 21$	77KUPISHI 79BAR/SCO 79BAR/SCO
C <sub>6</sub> H <sub>9</sub> O <sup>-</sup> cyclohexanone enolate <sup>-</sup> 1.55±0.05			PD	$\Delta_f H(AH) = -226 \pm 2$	77PED/RYL
C <sub>6</sub> H <sub>11</sub> - cyclohexanide- > 37±4 <sup>a</sup>	1690±4 <sup>g</sup>	> 1665	IMRB	$\Delta_f H(AH) = -123$ $BDE(A-H) = 400\pm4$	77PED/RYL 82MCM/GOL 72BOH/LEE
C <sub>6</sub> H <sub>11</sub> O <sup>-</sup> CH <sub>2</sub> =C(tBu)O <sup>-</sup> * -280±15 <sup>a</sup> 1.84±0.07	1540±15 <sup>c</sup>	1512±18 h	PD	$\Delta_f H(AH) = -290 \pm 1$ BDE(A-H) = 406 \pm 8	77PED/RYL
C <sub>6</sub> H <sub>11</sub> O <sup>-</sup> tBuCH = CHO <sup>-</sup> • -282±21 <sup>a</sup> 1.82±0.06	1517±18 <sup>e</sup>	1490±23 <sup>h</sup>	Est PD	$\Delta_f H(AH) = -269 \pm 2$ BDE(A-H) = 381 \pm 13	77ZIM/REE

Table 2. Negative Ion Table - Continued

		Table	2. Negative Io	n Table	- Continued	
Ion $\Delta_f H(A)$ $\Delta_f H(X \cdot \cdot Y)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> H <sub>11</sub> O <sub>2</sub> -					$\Delta_f H(AH) = -514\pm 2$ BDE(A-H) = 444\pm 48	77PED RYL
• -597±11 a	3.2±0.2 d	1447±10	1418±12 <sup>h</sup>	CIDC	554(****)	81MCL/CAM
$\begin{array}{c} \text{C}_6\text{H}_{11}\text{O}_2^- \\ \text{tBuCH}_2\text{CO}_2^- \end{array}$				Est	$\Delta_f H(AH) = -538\pm4$ $BDE(A-H) = 444\pm8$	
• · -623±15 a		1444±11 g	1415±8	IMRE		86TAF
C <sub>6</sub> H <sub>11</sub> S <sub>2</sub> <sup>-</sup> 5,5-dimethyl-1	3-dithiani	ide"		Est	$\Delta_f H(AH) = -59 \pm 17$	
* -24±28 a	,,5 diman	1566±11 <sup>g</sup>	1535±8 1530±8	IMRE IMRE <sup>C</sup>		81BAR/HAY 81BAR/HAY
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> Et <sub>2</sub> C(Me)O <sup>-</sup>				Est	$\Delta_f H(AH) = -356\pm 4$	
• -330±15 <sup>a</sup>	2.0±0.2 <sup>đ</sup>	1556±11 1553±10	1528±13 <sup>h</sup>	CIDC°	BDE(A-H) = 440±4	83BOA/HOU 83BOA/HOU
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> iPrCH(Et)O <sup>-</sup>				Est	$\Delta_f H(AH) = -342\pm 4$ $BDE(A-H) = 438\pm 4$	
* -318±15 <sup>a</sup>	2.0±0.2 <sup>d</sup>	1554±11 1551±10	1527±13 <sup>h</sup>	CIDC <sup>o</sup>		83BOA/HOU 83BOA/HOU
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> iPrCH <sub>2</sub> CH <sub>2</sub> CH				Est	$\Delta_f H(AH) = -327 \pm 4$ BDE(A-H) = 436 \pm 4	
• -296±14 a	1.9±0.1 <sup>d</sup>	1561±10 1557±10	1533±11 <sup>h</sup>	CIDC <sup>o</sup>		83BOA/HOU 83BOA/HOU
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> nC <sub>6</sub> H <sub>13</sub> O <sup>-</sup>					$\Delta_f H(AH) = -315 \pm 1$ BDE(A-H) = 436 \pm 4	77PED RYL
• -284±12 a	1.9±0.2 <sup>d</sup>	1561±11 1557±10	1533±13 <sup>h</sup>	CIDC <sup>o</sup>	2024 · 19 - 40024	83BOA/HOU 83BOA/HOU
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> nPrC(Me) <sub>2</sub> O <sup>-</sup>		T-14- No 14		Est	$\Delta_f H(AH) = -352\pm 4$ $BDE(A-H) = 440\pm 4$	
• -326±15 <sup>a</sup>	2.0±0.2 <sup>d</sup>	1557±11 1554±10	1529±13 <sup>h</sup>	CIDC <sup>o</sup>	DDE(N-1)) = 44024	83BOA/HOU 83BOA/HOU
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> tBuCH(Me)O <sup>-</sup>				Est	$\Delta_f H(AH) = -351 \pm 4$ $BDE(A-H) = 438 \pm 4$	
* -328±16 <sup>a</sup>	2.05±0.17 <sup>d</sup>	1553±12 <sup>g</sup>	1525±8 1523±8	IMRE IMRE <sup>0</sup>		79BAR/SCO 79BAR/SCO
C <sub>6</sub> H <sub>13</sub> O <sup>-</sup> tBuCH <sub>2</sub> CH <sub>2</sub> O <sup>-</sup>	•				Δ <sub>f</sub> H(AH)= -332±4 BDE(A-H)= 436±4	
* -304±15 a		1559±11 1555±10	1531±13 <sup>h</sup>	CIDC <sup>o</sup>	,	83BOA/HOU 83BOA/HOU
$C_6H_{13}O_2^ nPrOH \cdot \cdot CH_2 =$	: C(Me)O					
-518±23 °	2()0	61±10 <sup>g</sup>	33±8	IMRE		84CAL/ROZ

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>6</sub> H <sub>14</sub> BF <sub>2</sub> <sup>-</sup> iPr <sub>2</sub> BF··F					
<-817 °	278		IMRB	$F^-A: SiF_4 > iPr_2BF > iPr_3B$	77MUR/BEA2
C <sub>6</sub> H <sub>15</sub> BCl <sup>-</sup>					
Et <sub>3</sub> B···Cl <sup></sup> * -476±15 <sup>c</sup>	100±8 <sup>g</sup>	72±8	IMRE		85LAR/MCM
C <sub>6</sub> H <sub>15</sub> BF					
Et <sub>3</sub> B··F¯ * -611±16 <sup>c</sup>	213±8 <sup>g</sup>	182±8	IMRE		85LAR/MCM
	259			$F^-A$ : $iPr_3B > Et_3B > MeSiF_3$	77MUR/BEA2
C <sub>6</sub> H <sub>15</sub> BFO <sub>3</sub> <sup>-</sup> (EtO) <sub>3</sub> B··F					
-1434±17 °	184±13 g	153±8	IMRB		85LAR/MCM
C <sub>6</sub> H <sub>15</sub> OSi <sup>-</sup> Et <sub>3</sub> SiO <sup>-</sup>			Est2	$\Delta_f H(AH) = -559 \pm 8$	
-580±19 <sup>a</sup>	1508±11 g	1479±8	IMRE		87THO/BAR
C <sub>6</sub> H <sub>15</sub> O <sub>2</sub> <sup>-</sup> EtOH··tBuO <sup>-</sup>					
-592±23 <sup>c</sup>	82±10 <sup>g</sup>	54±8	IMRE		84CAL/ROZ
C <sub>6</sub> H <sub>15</sub> O <sub>2</sub> -					
MeOH··tBuCH <sub>2</sub> O <sup></sup> -569±25 <sup>c</sup>	78±10 g	50±8	IMRE		84CAL/ROZ
C <sub>6</sub> H <sub>15</sub> O <sub>2</sub> -					
nPrOH··nPrO <sup>™</sup> -554±21 <sup>c</sup>	88±10 g	60±8	IMRE		84CAL/ROZ
C <sub>6</sub> H <sub>17</sub> Si <sup>-</sup>			<u>"</u>		· · · · · · · · · · · · · · · · · · ·
Et <sub>3</sub> SiH··H <sup></sup> -98 <sup>c</sup>	43±23		IMRB		86HAJ/SQU
C <sub>6</sub> H <sub>18</sub> NSi <sub>2</sub> -				$\Delta_f H(AH) = -477 \pm 6$	77PED RYL
(Me <sub>3</sub> Si) <sub>2</sub> N <sup>-</sup> -497±15 <sup>a</sup> 2.32 <sup>d</sup>	1509±10 g	1477±8	IMRE	BDE(A-H) = > 421	<i>78ROB WIN</i> 87THO/BAR
C <sub>7</sub> F <sub>5</sub> N <sup>-</sup>					
C6F5CN				$\Delta_f H(A) = -746 \pm 13$	
* -852±22 <sup>b</sup> 1.10±0.10 1.10±0.10			TDEq TDEq		87KEB/CHO 86CHO/GRI
C <sub>7</sub> F <sub>8</sub> -	<del></del>	<del></del>			
perfluorotoluene.				$\Delta_f H(A) = -1187 \pm 8$	77PED/RYL
* -1278±17 <sup>b</sup> 0.94±0.10			TDEq		87KEB/CHO
0.91±0.10 > 1.7±0.3			IMRE EnCT		86CHO/GRI 73LIF/TIE

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>7</sub> F <sub>13</sub> -				Est	$\Delta_f H(AH) = -2705 \pm 21$	
perfluoromethy -3063 b	ylcyclohexa 3.9	anide T		EIAP	From c-C <sub>6</sub> F <sub>11</sub> (CF <sub>3</sub> )	70LIF/PEE
C7F <sub>14</sub> <sup>-</sup> perfluorometh -3002±11 b				TDEq IMRB	$\Delta_f H(A) = -2900 \pm 1$	77PED/RYL 85GRI/CHO 85GRI/CAL
C7H3Cl2N <sup>-</sup> 2,6-diCl-benzo * 87±22 b	onitrile 0.72±0.10 0.70±0.09			Est2 TDEq TDEq	$\Delta_{f}H(A)=156\pm13$	87KEB/CHO 86CHO/KEB
C7H3Cl3O2 <sup>-</sup> Me-triCl-benz • -449±21 b				Est2 IMRE	$\Delta_{f}H(A)=-212\pm17$	85FUK/MCI
C7H3F5O <sup>-</sup> pentafluoroani -990±17 <sup>b</sup>		)		Est2 ECD	Δ <sub>f</sub> H(A)= -937±8	84HER/WEN
C <sub>7</sub> H <sub>3</sub> N <sub>3</sub> O <sub>4</sub> <sup>-</sup> 3-NO <sub>2</sub> -5-CN -20±14 b				<i>Est</i> TDEq	$\Delta_{f} H(A) = 188 \pm 4$	87KEB/CHO
C7H4ClO2 <sup>-</sup> mCl-benzoate • -473±15 <sup>a</sup>		ı <sup>d</sup> 1400±11 g	1368±8	IMRE	$\Delta_f H(AH) = -342\pm 4$ $BDE(A-H) = 444\pm 13$	77PED RYL 77MCM/KEB
C <sub>7</sub> H <sub>4</sub> ClO <sub>2</sub> <sup>-</sup> oCl-benzoate <sup>-</sup> * -454±14 <sup>a</sup>		ı d 1401±11 g	1372±8	IMRE	$\Delta_f H(AH) = -325\pm3$ $BDE(A-H) = 444\pm13$	77PED/RYL 77MCM/KEB
C <sub>7</sub> H <sub>4</sub> ClO <sub>2</sub> <sup>-</sup> pCl-benzoate <sup>*</sup> -472±14 <sup>a</sup>		₁ <sup>d</sup> 1399±11 <sup>g</sup>	1369±8	IMRE	$\Delta_f H(AH) = -341 \pm 3$ $BDE(A-H) = 444 \pm 13$	77PED/RYL 77MCM/KEB
C <sub>7</sub> H <sub>4</sub> FO <sub>2</sub> <sup>-</sup> mF-benzoate <sup>-</sup> • -617±15 <sup>a</sup>		₁ <sup>d</sup> 1403±11 <sup>g</sup>	1372±8	Est IMRE	$\Delta_f H(AH) = -490 \pm 4$ $BDE(A-H) = 444 \pm 13$	77MCM/KEB
C <sub>7</sub> H <sub>4</sub> FO <sub>2</sub> <sup>-</sup> oF-benzoate <sup>-</sup> * -623±25 <sup>a</sup>	3 76±0 20	) <sup>d</sup> 1410±12 <sup>g</sup>	1378±8	Est2	$\Delta_f H(AH) = -502\pm13$ $BDE(A-H) = 460\pm17$	77MCM/KEB
C <sub>7</sub> H <sub>4</sub> FO <sub>2</sub>	3.70±0.30		13/010	MAINE	$\Delta_f H(AH) = -495 \pm 3$	77PEDIRYL
pF-benzoate -620±14 a	3.63±0.24	d 1405±11 g	1376±8	IMRE	BDE(A-H)= 444±13	77MCM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdots Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> <sup>-</sup> CF <sub>3</sub> -phenide <sup>-</sup> -511±24 <sup>a</sup> 1.6±0.4 <sup>d</sup>	1618±23 <sup>g</sup>	1586±21	IMRB	$\Delta_f H(AH) = -599 \pm 1$ $BDE(A-H) = 460 \pm 13$	77PED/RYL
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> NO <sub>2</sub> <sup>-</sup> mCF <sub>3</sub> -nitrobenzene <sup>-</sup>			Est	$\Delta_f H(A) = -604 \pm 8$	7721 MANUAL
* -740±18 <sup>b</sup> 1.41±0.10 1.34±0.11 1.33±0.05			TDEq IMRE IMRE	, , ,	87KEB/CHO 85GRI/CAL 85FUK/MCI
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> NO <sub>2</sub> <sup>-</sup> oCF <sub>3</sub> -nitrobenzene <sup>-</sup> · • -732±14 b 1.33±0.10			Est TDEq	$\Delta_f H(A) = -604 \pm 4$	87KEB/CHO
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> NO <sub>2</sub> <sup>-</sup> pCF <sub>3</sub> -nitrobenzene <sup>-</sup> · • -746±14 <sup>b</sup> 1.47±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = -604 \pm 4$	87KEB/CHO
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> O <sup>-</sup> mCF <sub>3</sub> -phenoxide <sup>-</sup> * -875±18 <sup>a</sup> 2.64±0.19	d <sub>1420±10</sub> g	1391±8	Est IMRE	$\Delta_f H(AH) = -765 \pm 8$ $BDE(A-H) = 362 \pm 8$	81FUJ/MCI
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> O <sup>-</sup> pCF <sub>3</sub> -phenoxide <sup>-</sup> • -885±19 <sup>a</sup> 2.74±0.24	i 1410±11 g	1381±8	Est IMRE	$\Delta_f H(AH) = -765\pm 8$ $BDE(A-H) = 362\pm 13$	81FUJ/MCI
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> OS <sup>-</sup> mSCF <sub>3</sub> -phenoxide <sup>-</sup> * 2.72±0.20 °	i 1411±11 g	1382±8	IMRE	BDE(A-H)= 362±8	86TAF
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> OS <sup>-</sup> pSCF <sub>3</sub> -phenoxide <sup>-</sup> * 2.81±0.23 <sup>c</sup>	i 1403±10 <sup>g</sup>	1374±8	IMRE	BDE(A-H)= 362±13	86TAF
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> O <sub>3</sub> S <sup>-</sup> mSO <sub>2</sub> CF <sub>3</sub> -phenoxide <sup>-</sup> • 3.06±0.20 S	i 1379±11 <sup>g</sup>	1350±8	IMRE	BDE(A-H)= 362±8	86TAF
C <sub>7</sub> H <sub>4</sub> F <sub>3</sub> O <sub>3</sub> S <sup>-</sup> pSO <sub>2</sub> CF <sub>3</sub> -phenoxide <sup>-</sup> * 3.36±0.24 C	1 1350±11 <sup>g</sup>	1321±8	IMRE	BDE(A-H)= 362±13	86TAF
C <sub>7</sub> H <sub>4</sub> F <sub>4</sub> O <sup>-</sup> 2,3,5,6-tetrafluoroanisole <sup>-</sup> -866±13 <sup>b</sup> 0.22±0.09			Est ECD	$\Delta_f H(A) = -845\pm4$	84HER/WEN
C <sub>7</sub> H <sub>4</sub> NO <sup>-</sup> mCN-phenoxide <sup>-</sup> • -82±18 <sup>a</sup> 2.79±0.19 <sup>d</sup>	1405±10 g 1405±10 g	1376±8 1377±8		$\Delta_f H(AH) = 43\pm 8$ BDE(A-H) = 362±8	81FUJ/MCI 77MCM/KEB

Table 2. Negative Ion Table - Continued

In A EVATA 174/43 A	TT /ATT	AG (411)	Made = 1	C	Dafa
-	H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>7</sub> H <sub>4</sub> NO <sup>-</sup> oCN-phenoxide <sup>-</sup>			Est2	$\Delta_f H(AH) = 25 \pm 13$ $BDE(A-H) = 378 \pm 17$	
• -105±25 a 3.00±0.30 d	1400±12 g	1369±8	IMRE		81FUJ/MCI
	1400±12 g	1369±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>4</sub> NO <sup>-</sup> pCN-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = 43\pm 8$	
-97±19 a	1390±11 <sup>g</sup>	1361±8	IMRE		81FUJ/MCI
	1392±11 <sup>g</sup>	1363±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>4</sub> NO <sub>4</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -310\pm8$	
mNO <sub>2</sub> -benzoate	4000 44 9	4050 0		$BDE(A-H) = 444 \pm 13$	77 (C) (1777)
• -458±19 <sup>a</sup> 3.88±0.24 <sup>d</sup>	1382±11 <sup>g</sup> 1379±11 <sup>g</sup>	1350±8	IMRE		77MCM/KEB 86TAF
	13/9±11 6	1347±8	IMRE		801AF
C <sub>7</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup> mCN-nitrobenzene <sup>-</sup>			Est	$\Delta_f H(A) = 204 \pm 8$	
* 53±18 b 1.56±0.10			TDEq	Z411(ry = 20110	87KEB/CHO
1.48±0.11			IMRE		85GRI/CAL
1.49±0.05			IMRE		85FUK/MCI
C <sub>7</sub> H <sub>4</sub> N <sub>2</sub> O <sub>2</sub> -					
oCN-nitrobenzene			Est	$\Delta_f H(A) = 204 \pm 4$	
* 48±14 <sup>b</sup> 1.61±0.10			TDEq		87KEB/CHO
$C_7H_4N_2O_2^-$					
pCN-nitrobenzene			Est	$\Delta_f H(A) = 202 \pm 4$	021/277/0110
* 36±14 b 1.72±0.10			TDEq IMRE		87KEB/CHO
1.65±0.11			IMICE		85GRI/CAL
C <sub>7</sub> H <sub>4</sub> N <sub>3</sub> O <sub>6</sub> <sup>-</sup>				$\Delta_f H(AH) = 39\pm 2$	77PEL
2,4,6-triNO <sub>2</sub> -C <sub>6</sub> H <sub>2</sub> CH <sub>2</sub> - -112±27 <sup>a</sup>	1379±25 <sup>g</sup>	1351±21	IMRB		74DZI/CAR
C <sub>7</sub> H <sub>5</sub> ClNO <sup>-</sup>			··································		
pCN-C <sub>6</sub> H <sub>4</sub> OH··Cl <sup>-</sup>					
· • • • • • • • • • • • • • • • • • • •	141±8	109±8	TDEq		77CUM/FRE
C <sub>7</sub> H <sub>5</sub> ClO <sub>2</sub> <sup>-</sup>					
2-Cl-5-Me-benzoquinone			Est2	$\Delta_f H(A) = -180 \pm 17$	
• -375±21 b 2.02±0.05			IMRE		85FUK/MCI
C <sub>7</sub> H <sub>5</sub> FO <sup>-</sup>					· ———
mF-benzaldehyde.			Est	$\Delta_{f}H(A) = -230 \pm 8$	
-295±13 <sup>b</sup> 0.67±0.05			ECD		75WEN/KAO
C <sub>7</sub> H <sub>5</sub> FO-			_		
oF-benzaldehyde			Est	$\Delta_f H(A) = -230 \pm 21$	germana . A
-292±25 b 0.64±0.04			ECD		75WEN/KAO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>7</sub> H <sub>5</sub> FO <sup>-</sup> pF-benzaldeh -273±10 b	yde <sup></sup> 0.49±0.02			Est ECD	$\Delta_f H(A) = -226 \pm 8$	75WEN/KAO
C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> N <sup>-</sup> mCF <sub>3</sub> -anilide • -621±18 <sup>a</sup>	_	1493±10 g	1463±8	Est IMRE	$\Delta_f H(AH) = -585 \pm 8$ $BDE(A-H) = 368 \pm 13$	79BAR/SCO
C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> N <sup>-</sup>			1472±8	IMRE <sup>C</sup>	$\Delta_f H(AH) = -585 \pm 10$	79BAR/SCO
pCF <sub>3</sub> -anilide <sup>*</sup> -636±19 <sup>a</sup>	•	1479±10 <sup>g</sup>	1448±8 1457±8	IMRE IMRE	•	79BAR/SCO 79BAR/SCO
C7H5F3NO2S mSO2CF3-ani		d 1451±11 g	1421±8	IMRE	BDE(A-H)= 368±13	86TAF
C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> NO <sub>2</sub> S pSO <sub>2</sub> CF <sub>3</sub> -anil		d <sub>1417±11</sub> g	1386±8	IMRE	BDE(A-H)= 368±13	86TAF
C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> NS <sup>-</sup> mSCF <sub>3</sub> -anilide	2.01±0.24	d <sub>1487±11</sub> g	1456±8	IMRE	BDE(A-H)= 368±13	86TAF
C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> NS <sup>-</sup> pSCF <sub>3</sub> -anilide	- 2.19±0.24	d <sub>1469±11</sub> g	1438±8	IMRE	BDE(A−H)= 368±13	86TAF
C <sub>7</sub> H <sub>5</sub> N <sup>-</sup> benzonitrile <sup>-</sup> 194±4 b	0.26±0.02 0.3±0.1			ECD ECD	$\Delta_f H(A) = 219\pm 2$	<i>82CHUINGU</i> 75WEN/KAO 83ZLA/LEE
C7H5NO3 <sup>-</sup> mCHO-nitrob * -188±14 b				Est TDEq	$\Delta_f H(A) = -52\pm 4$	87KEB/CHO
C7H5NO3 <sup>-</sup> oCHO-nitrobe • -198±14 b				Est TDEq	$\Delta_f H(A) = -52\pm 4$	87KEB/CHO
C <sub>7</sub> H <sub>5</sub> NO <sub>3</sub> <sup>-</sup> pCHO-nitrobe * -213±14 b				Est TDEq	$\Delta_f H(A) = -52 \pm 4$	87КЕВ/СНО
C <sub>7</sub> H <sub>5</sub> N <sub>2</sub> <sup>-</sup> indazolide <sup>-</sup>		1456±11 <sup>g</sup>	1424±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

	Table.	2. Negative for	1 Lable	- Continued	
	∆H <sub>acid</sub> (AH) hH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>7</sub> H <sub>5</sub> N <sub>2</sub> <sup>-</sup> mCN-anilide <sup>-</sup>			Est	$\Delta_f H(AH) = 223 \pm 4$ BDE(A-H) = 368 \pm 13	
• 170±14 <sup>a</sup> 2.11±0.23 <sup>d</sup>	1477±10 g	1446±8	IMRE		86TAF
C <sub>7</sub> H <sub>5</sub> N <sub>2</sub> <sup>-</sup> pCN-anilide <sup>-</sup>			Est	$\Delta_f H(AH) = 216\pm4$	
• 146±14 <sup>a</sup>	1460±10 g	1429±8	IMRE		86TAF
C <sub>7</sub> H <sub>5</sub> O <sub>2</sub> <sup>-</sup>				$\Delta_f H(AH) = -294 \pm 2$ BDE(A-H) = 444 \pm 13	77PED/RYL
* -407±14 <sup>a</sup>	1418±12 <sup>g</sup>	1388±8	IMRE		78CUM/KEB
	1423±12 g	1393±8	IMRE		81FUJ/MCI
C <sub>7</sub> H <sub>5</sub> O <sub>2</sub> - mCHO-phenoxide-			Est -	$\Delta_f H(AH) = -213 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -319±18 <sup>a</sup> 2.58±0.19 <sup>d</sup>	1425±10 g	1396±8	IMRE		81FUJ/MCI
C <sub>7</sub> H <sub>5</sub> O <sub>2</sub> <sup>-</sup> pCHO-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -213 \pm 8$	,
* -350±19 <sup>a</sup>	1393±11 <sup>g</sup>	1364±8	IMRE		81FUJ/MCI
C <sub>7</sub> H <sub>5</sub> O <sub>3</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -470 \pm 8$	
mOH-benzoate <sup>-</sup> * -587±19 <sup>a</sup> 3.54±0.24 <sup>d</sup>	1414±11 <sup>g</sup>	1382±8	IMRE	BDE(A-H)= 444±13	77МСМ/КЕВ
C7H5O3 <sup>-</sup> oOH-benzoate <sup>-</sup>		· · · · · · · · · · · · · · · · · · ·		$\Delta_f H(AH) = -495$	77PED/RYL
* -660±13 <sup>a</sup>	1365±12 g	1332±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>5</sub> O <sub>3</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -470 \pm 8$	
pOH-benzoate	_			BDE(A-H)= 444±13	
* -598±19 <sup>a</sup> 3.66±0.24 <sup>d</sup>	1402±11 g	1371±8	IMRE	- Park	77MCM/KEB
C <sub>7</sub> H <sub>6</sub> Cl <sup>-</sup> mCl-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = 18\pm 8$ $BDE(A-H) = 356\pm 8$	80PRY
* 53±19 a 1.07±0.20 d	1565±11 <sup>g</sup>	1535±8	IMRE	555(1.17)	83CAL/BAR
C <sub>7</sub> H <sub>6</sub> Cl <sup>-</sup>			Est	$\Delta_f H(AH) = 18\pm 8$	
pCl-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> * 53±19 <sup>a</sup> 1.11±0.20 <sup>d</sup>	1565±11 <sup>g</sup>	1535±8	IMRE	BDE(A−H) = 360±8	<i>80PRY</i> 83CAL/BAR
C7H6F <sup>-</sup> mF-C6H4CH2 <sup>-</sup>			Est	$\Delta_f H(AH) = -150 \pm 8$ $BDE(A-H) = 358 \pm 8$	
• -109±19 <sup>a</sup> 1.03±0.20 <sup>d</sup>	1571±11 <sup>g</sup>	1541±8	IMRE	, ,	83CAL/BAR
C <sub>7</sub> H <sub>6</sub> F <sup>-</sup> pF-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>				$\Delta_f H(AH) = -148 \pm 1$ $BDE(A-H) = 360 \pm 13$	77PED RYL
- 90±12 <sup>a</sup> 0.87±0.24 <sup>d</sup>	1588±11 <sup>g</sup>	1558±8	IMRE		83CAL/BAR

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A)	ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_f H(X \cdot \cdot Y^-)$ eV	$\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{aff}(X \cdots Y^{-})$			
C <sub>7</sub> H <sub>6</sub> FNO <sub>2</sub> <sup>-</sup> 2-Me-4-F-nitrobenzene -246±21 b 0.95±0.05	<b>-</b> .		Est2 IMRE	$\Delta_f H(A) = -155 \pm 17$	85FUK/MCI
C <sub>7</sub> H <sub>6</sub> FO			Est	$\Delta_f H(AH) = -267 \pm 8$	
mF-C <sub>6</sub> H <sub>3</sub> OMe <sup></sup> * -208±23 <sup>a</sup>	1589±15 g	1556±13	IMRB		83ING/NIB
C <sub>7</sub> H <sub>6</sub> FO <sup>-</sup> oF-C <sub>6</sub> H <sub>3</sub> OMe <sup>-</sup>			Est	$\Delta_f H(AH) = -264 \pm 8$	
-175±32 a	1618±23 g	1586±21	IMRB		83ING/NIB
C <sub>7</sub> H <sub>6</sub> FO			Est	$\Delta_f H(AH) = -267 \pm 8$	
pF-C <sub>6</sub> H <sub>3</sub> OMe <sup>-</sup> -178±32 <sup>a</sup>	1618±23 g	1586±21	IMRB		83ING/NIB
C <sub>7</sub> H <sub>6</sub> NO <sup>-</sup> HN=C(Ph)O <sup>-</sup>				$\Delta_f H(AH) = -101 \pm 13$	82TOR(SAB2
* -149±23 a	1482±11 g	1452±8	IMRE		86TAF
C <sub>7</sub> H <sub>6</sub> NO <sup>-</sup> PhCH=NO <sup>-</sup>			Est	$\Delta_f H(AH) = 108 \pm 8$	
* 54±28 a	1477±20 g	1447±8 1453±8	IMRE IMRE <sup>0</sup>		79BAR/SCO 79BAR/SCO
C <sub>7</sub> H <sub>6</sub> NO <sup>-</sup>			Est	$\Delta_f H(AH) = 55\pm 4$	
mNO-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> * 64±15 <sup>a</sup> 1.38±0.24 <sup>c</sup>	d 1539±11 g	1511±8	IMRE	BDE(A-H) = 360±13	86TAF
C <sub>7</sub> H <sub>6</sub> NO			Est	$\Delta_f H(AH) = -34 \pm 4$	
pCHO-anilide <sup>-</sup> * -101±15 <sup>a</sup>	1463±11 g	1432±8	IMRE		86TAF
C <sub>7</sub> H <sub>6</sub> NO			Est	$\Delta_f H(AH) = 55 \pm 4$	
pNO-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> * -3±15 <sup>a</sup>	1472±11 <sup>g</sup>	1444±8	IMRE	•	86TAF
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub> -				$\Delta_f H(AH) = -289 \pm 4$	77NAB/\$AB
mNH <sub>2</sub> -benzoate <sup></sup> * -393±15 <sup>a</sup> 3.42±0.24 <sup>c</sup>	i 1426±11 g	1395±8	IMRE	$BDE(A-H) = 444\pm13$	77MCM/KEB
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub>				$\Delta_f H(AH) = 31 \pm 4$	77PED/RYL
mNO <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup></sup> * 19±15 <sup>a</sup>	1518±11 <sup>g</sup>	1488±8	IMRE	$BDE(A-H) = 360 \pm 13$	83CAL/BAR
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub> <sup>-</sup>				$\Delta_f H(AH) = -298 \pm 2$	77NAB SAB
oNH <sub>2</sub> -benzoate <sup>-</sup> • -422±14 <sup>a</sup>	1406±12 g	1377±8	IMRE		77MCM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		H <sub>acid</sub> (AH) <sub>aff</sub> (X··Y)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub> <sup>-</sup> oNO <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> 0	CH <sub>2</sub> -			Est2	$\Delta_f H(AH) = 53\pm13$	
* 13±23 a	2	1490±11 g	1459±8	IMRE		86TAF
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub> - pNH <sub>2</sub> -benzoa	ate <sup>-</sup>				$\Delta_f H(AH) = -294 \pm 4$ $BDE(A-H) = 444 \pm 13$	77NAB SAB
	3.40±0.24 d	1427±11 g	1397±8	IMRE	. ,	77MCM/KEB
C <sub>7</sub> H <sub>6</sub> NO <sub>2</sub> - pNO <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> 0	CH <sub>2</sub> -				$\Delta_f H(AH) = 30\pm 4$	77PED RYL
* -25±14 a		1475±10 g	1445±8	IMRE		86TAF
-23±14 <sup>a</sup>		1477±10 g	1447±8	IMRE		78CUM/KEB
C <sub>7</sub> H <sub>6</sub> NO <sub>3</sub> <sup>-</sup> 2-Me-4-NO <sub>2</sub>	-phenoxide			Est .	$\Delta_f H(AH) = -142 \pm 8$	
• -297±21 a		1375±12 g	1343±8	IMRE		81FUJ/MCI
C <sub>7</sub> H <sub>6</sub> N <sub>2</sub> O <sub>4</sub> -						
	-nitrobenzene-			Est2	$\Delta_f H(A) = 203 \pm 13$	
* 69±17 <sup>b</sup>	1.39±0.05			IMRE		85FUK/MCI
С <sub>7</sub> Н <sub>6</sub> О-						
benzaldehyde"					$\Delta_f H(A) = -37 \pm 2$	77PED RYL
−78±3 <sup>b</sup>	0.429±0.009			ECD		75WEN/KAC
	0.39±0.05			ECD		83ZLA/LEE
	0.42±0.01			ECD		67WEN/CHE
C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> -						
methylbenzoqu				Est	$\Delta_f H(A) = -155 \pm 8$	
• -334±18 b	1.85±0.10			TDEq		87KEB/CHO
	1.75±0.11			IMRE		85GRI/CAL
	1.76±0.05			IMRE		85FUK/MCI
C <sub>7</sub> H <sub>7</sub> -					$\Delta_f H(AH) = 50$	77PED/RYL
PhCH <sub>2</sub>					$BDE(A-H) = 368\pm4$	82MCM/GOL
• 113±10 <sup>a</sup>	0.90±0.15 <sup>d</sup>	1593±10 g	1564±8	IMRE		79BAR/SCO
*	0.863±0.013			LPD		84DRZ/BRA2
	0.885±0.065			LPD		75RIC/STE
		1609±31 g	1579±29	IMRB		71BOH/YOU
	2.35±0.07			SI		76FAI/JOY
	1.1			SI		72PAG
	0.8			SI		69PAG/GOO
	0.8			SI		68GAI/PAG
			1558±8	IMRE <sup>0</sup>		79BAR/SCO
C <sub>7</sub> H <sub>7</sub> -					$\Delta_f H(AH) = 183 \pm 1$	77PED/RYL
cycloheptatrier	nide <sup>—</sup>				BDE(A-H)= 305±8	82MCM/GOL
	0.49±0.21 <sup>đ</sup>	1570±12 g	1545±8	IMRE	. •	79BAR/SCO
			1539±8	IMRE <sup>0</sup>		79BAR/SCO

Table 2. Negative Ion Table - Continued

	Table 2. Negative Ion Table - Continued						
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference		
C <sub>7</sub> H <sub>7</sub> <sup>-</sup> norbornadienide <sup>-</sup>				$\Delta_f H(AH) = 238\pm4$	80ROGICHO		
* 380±14 <sup>a</sup>	1672±10 <sup>g</sup>	1637±6 1628±21	IMRB IMRB	Between EtNH <sub>2</sub> , nPrNH <sub>2</sub>	86LEE/SQU 81WRI/BEA		
C <sub>7</sub> H <sub>7</sub> ClNO <sub>2</sub> <sup>-</sup> pNO <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>3</sub> ··Cl <sup>-</sup>							
		31	TDEq		82FRE/IKU		
$\frac{C_7H_7F_2^-}{PhCH_2F\cdots F^-}$							
* -230 <sup>c</sup>	102±8 <sup>g</sup>	69±8	IMRE		83LAR/MCM		
C <sub>7</sub> H <sub>7</sub> NO <sub>2</sub> <sup>-</sup>							
mMe-nitrobenzene			Est	$\Delta_f H(A) = 31 \pm 4$			
* -65±14 <sup>b</sup> 0.99±0.10 0.93±0.11			TDEq		87KEB/CHO		
0.92±0.05			IMRE IMRE		85GRI/CAL 85FUK/MCI		
0.8±0.1			ECD		83ZLA/LEE		
C <sub>7</sub> H <sub>7</sub> NO <sub>2</sub>		·		·			
oMe-nitrobenzene				$\Delta_f H(A) = 53 \pm 8$	77PED RYL		
* -36±18 b 0.92±0.10			TDEq		87KEB/CHO		
0.87±0.11			IMRE		85GRI/CAL		
0.89±0.05			IMRE		85FUK/MCI		
C <sub>7</sub> H <sub>7</sub> NO <sub>2</sub> <sup>-</sup>							
pMe-nitrobenzene-				$\Delta_f H(A) = 31 \pm 4$	77PED/RYL		
* -61±13 b 0.95±0.10			TDEq		87KEB/CHO		
0.89±0.11			IMRE		85GRI/CAL		
0.91±0.05			IMRE		85FUK/MCI		
C <sub>7</sub> H <sub>7</sub> NO <sub>3</sub> <sup>-</sup>	<u>-</u>		Est	$\Delta_f H(AH) = -142 \pm 17$			
3-Me-4-NO <sub>2</sub> -phenoxide * -292±28 <sup>a</sup>	1380±11 g	1350±8	IMRE		81FUJ/MCI		
C <sub>7</sub> H <sub>7</sub> NO <sub>3</sub> <sup>-</sup>							
mOMe-nitrobenzene-			Est	$\Delta_f H(A) = -90 \pm 4$			
• -191±14 b 1.04±0.10			TDEq	•	87KEB/CHO		
0.98±0.11			IMRE		85GRI/CAL		
C <sub>7</sub> H <sub>7</sub> NO <sub>3</sub> -							
pOMe-nitrobenzene				$\Delta_f H(A) = -90 \pm 4$			
• -178±14 b 0.91±0.10			TDEq		87KEB/CHO		
0.85±0.11			IMRE		85GRI/CAL		
С7H7O <sup>-</sup> РьСН <sub>2</sub> O <sup>-</sup>				$\Delta_f H(AH) = -100\pm 1$ BDE(A-H) = 436 $\pm$ 4	77PED/RYL		
• -82±13 a 2.07±0.17 d	1548±12 g	1520±8	IMRE	• • •	79BAR/SCO		
* 2.142±0.013	3		LPD		85MOY/DOD		
		1519±8	IMREO		79BAR/SCO		

Table 2. Negative Ion Table - Continued

	Table	2. Negative ioi	I TADIE	- Continued	
	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>7</sub> H <sub>7</sub> O <sup>-</sup> mMe-phenoxide <sup>-</sup>			,	$\Delta_f H(AH) = -132 \pm 1$ $BDE(A-H) = 362 \pm 8$	79KUD KUD
• -200±11 a 2.19±0.19 d	1463±10 g	1434±8	IMRE		81FUJ/MCI
	1467±10 g	1438±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>7</sub> O <sup>-</sup> oMe-phenoxide <sup>-</sup>				$\Delta_f H(AH) = -124 \pm 1$ BDE(A-H) = 362 \pm 13	79KUD KUD
• -192±13 a 2.19±0.26 d	1462±12 g	1431±8	IMRE		81FUJ/MCI
* <2.36±0.06			PD		75RIC/STE2
	1465±12 g	1434±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>7</sub> O <sup>-</sup>			··············	$\Delta_f H(AH) = -125 \pm 2$	79KUD KUD
pMe-phenoxide <sup>-</sup> • -190±11 <sup>a</sup> 2.16±0.23 <sup>d</sup>	1466 10 F	4.400 0	n m	$BDE(A-H) = 362 \pm 13$	04777 17 71 404
-190±11 - 2.16±0.23 -	1466±10 <sup>g</sup> 1466±10 <sup>g</sup>	1437±8	IMRE		81FUJ/MCI
	1400±10 g	1437±8 1442±8	IMRE IMRE		79BAR/SCO 77MCM/KEB
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> mOMe-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -250 \pm 8$ $BDE(A-H) = 362 \pm 8$	***************************************
* -324±18 <sup>a</sup> 2.26±0.19 <sup>d</sup>	1456±10 g	1427±8	IMRE	BUE(A-N)= 302±6	81FUJ/MCI
357110 2.2010.17	1459±10 g	1431±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> oOMe-phenoxide <sup>-</sup>			Est2	$\Delta_f H(AH) = -264 \pm 17$	· · · · · · · · · · · · · · · · · · ·
•		1433±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> pOMe-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -242 \pm 8$ $BDE(A-H) = 362 \pm 13$	
• -306±18 a 2.15±0.23 d	1466±10 g	1437±8	IMRE	===,,	81FUJ/MCI
	1469±10 g	1440±8	IMRE		77MCM/KEB
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> S <sup>-</sup> PhSO <sub>2</sub> CH <sub>2</sub> <sup>-</sup>				Δ <sub>f</sub> H(AH)= -254±3	77PED/RYL
• -266±13 <sup>a</sup>	1518±10 <sup>g</sup>	1487±8	IMRE		78CUM/KEB
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> S <sup>-</sup> mSOMe-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -194 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -297±18 <sup>a</sup> 2.55±0.19 <sup>d</sup>	1428±10 g	1399±8	IMRE	DDL(A-rij = 002±0	81FUJ/MCI
C <sub>7</sub> H <sub>7</sub> O <sub>2</sub> S <sup>-</sup> pSOMe-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -194 \pm 8$	
* -312±19 <sup>a</sup>	1412±11 g	1383±8	IMRE		81FUJ/MCI
C <sub>7</sub> H <sub>7</sub> O <sub>3</sub> S <sup>-</sup> mSO <sub>2</sub> Me-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -443\pm 8$ $BDE(A-H) = 362\pm 8$	
* -567±18 <sup>a</sup> 2.77±0.19 <sup>d</sup>	1406±10 g	1377±8	IMRE	DODAN IN- OURTO	81FUJ/MCI
C7H7O3S <sup>-</sup>			Est	$\Delta_f H(AH) = -443 \pm 8$	
pSO <sub>2</sub> Me-phenoxide <sup>-</sup> • -587±19 <sup>a</sup>	1385±11 g	1356±8	IMRE		81FUJ/MCI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdots Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method		Comment	Reference
C7H7S- MeSC6H4-					$\Delta_f H(AH) = BDE(A-H) =$		77PED/RYL
185±25 <sup>a</sup>		1617±23 <sup>g</sup>	1586±21 1583±33	IMRB IMRB <sup>0</sup>			85ING/NIB 85ING/NIB
C <sub>7</sub> H <sub>7</sub> S <sup>-</sup> PhSCH <sub>2</sub> <sup>-</sup>					Δ <sub>f</sub> H(AH)=	98±1	77PED/RYL
* 164±12 <sup>a</sup>		1597±11 <sup>g</sup>	1566±8 1560±8	IMRE IMRE <sup>C</sup>	1		85ING/NIB 85ING/NIB
C <sub>7</sub> H <sub>8</sub> Cl <sup>-</sup> PhMe··Cl <sup>-</sup>			et transcription of the second		-	· · · · · · · · · · · · · · · · · · ·	
			17	TDEq			82FRE/IKU
C7H8ClO- PhOMe··Cl-							
*· · · · · · · · · · · · · · · · · · ·			31	TDEq			82FRE/IKU
C <sub>7</sub> H <sub>8</sub> ClO <sup>-</sup> pMe-C <sub>6</sub> H <sub>4</sub> OH	· · Cl <sup>-</sup>						
* -453±11 <sup>c</sup>		101±8	69±8	TDEq			77CUM/FRE
C7H8N- PhNMe-					Δ <sub>f</sub> H(AH)= BDE(A-H)=		78COL/BEN 82MCM/GOL
* 81±15 <sup>a</sup>	1.57±0.20	d 1526±11 <sup>g</sup>	1496±8	IMRE			86TAF
C <sub>7</sub> H <sub>8</sub> N <sup>-</sup> mMe-anilide <sup>-</sup>				Est	Δ <sub>f</sub> H(AH)= BDE(A-H)=		
* 59±18 <sup>a</sup>	1.51±0.23	d 1535±10 g	1505±8 1507±8	IMRE IMRE <sup>0</sup>			79BAR/SCO 79BAR/SCO
C7H8N- pMe-anilide-				Est	Δ <sub>f</sub> H(AH) = BDE(A-H) =		
	1.49±0.24 <sup>(</sup>	d 1537±11 g	1507±8 1510±8	IMRE IMRE <sup>0</sup>			79BAR/SCO
C <sub>7</sub> H <sub>8</sub> NO <sup>-</sup>	·		151016		$\Delta_f H(AH) = -$		79BAR/SCO
pOMe-anilide53±18 a	1.50±0.23 <sup>(</sup>	d 1536±10 g	1505±8	IMRE	BDE(A-H)=	368±13	79BAR/SCO
			1509±8	IMREO			79BAR/SCO
C <sub>7</sub> H <sub>8</sub> NO <sub>2</sub> S <sup>-</sup> mSO <sub>2</sub> Me-anilid	e <sup>-</sup>	***************************************			Δ <sub>f</sub> H(AH)= BDE(A-H)=		
* -291±15 a		i 1475±11 <sup>g</sup>	1445±8	IMRE			86TAF
C7H8NO2S- pSO2Me-anilide	; <del>-</del>				Δ <sub>f</sub> H(AH)= BDE(A-H)=		
* -312±15 <sup>a</sup> 2		i 1455±11 <sup>g</sup>	1424±8	IMRE	<b></b> y	<del></del>	86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA $\Delta_f H(X \cdot Y^-)$ e		H <sub>acid</sub> (AH) V <sub>aff</sub> (X··Y <sup>-</sup> )	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>7</sub> H <sub>8</sub> NS <sup>-</sup> mSMe-anilide <sup>-</sup>				Est	$\Delta_f H(AH) = 104 \pm 8$ $BDE(A-H) = 368 \pm 13$	
	1±0.23 <sup>d</sup>	1515±10 g	1484±8 1492±8	IMRE IMRE <sup>C</sup>	, ,	79BAR/SCO 79BAR/SCO
C7H9 <sup>-</sup>				Est	Δ <sub>f</sub> H(AH)= 133±4	
_	7±0.03			PD		78ZIM/GYG
C <sub>7</sub> H <sub>9</sub> -					$\Delta_f H(AH) = 90\pm 4$	80ROG/CHO
norbornenide <sup>2</sup> 242±19 <sup>a</sup>		1682±15 g	1648±13	IMRB	between NH <sub>3</sub> , EtNH <sub>2</sub>	86LEE/SQU
C7H9O-	-1-4-			-	$\Delta_f H(AH) = -168 \pm 3$	78STE
2-norbornanone en  1.61	1±0.05			PD		78ZIM/JAC
C <sub>7</sub> H <sub>11</sub> O <sup>-</sup>			· · · · · · · · · · · · · · · · · · ·	Est	$\Delta_f H(AH) = -272 \pm 4$	
2,5-diMe-cyclopen • 1.49	tanone end 0±0.04	olate		PD		78ZIM/JAC
C <sub>7</sub> H <sub>11</sub> O-					$\Delta_f H(AH) = -248 \pm 2$	77PED/RYL
cycloheptanone eno	late <sup>—</sup> 3±0.04			PD		78ZIM/JAC
C <sub>7</sub> H <sub>11</sub> O <sub>4</sub> -				Est	$\Delta_f H(AH) = -839 \pm 2$	
HC(CO <sub>2</sub> Et) <sub>2</sub> <sup>-</sup> -912±12 <sup>a</sup>		1457±10 <sup>g</sup>	1432±8	IMRE		78CUM/KEB
С <sub>7</sub> Н <sub>13</sub> О-		<u> </u>		Est	$\Delta_f H(AH) = -301 \pm 4$	
EtCH = $C(nPr)O^{-}$ * $-296\pm18^{a}$ 1.72	£0.06	1535±14 <sup>e</sup>		PD	<i>BDE(A−H)</i> = 389±8	77ZIM/REE
C <sub>7</sub> H <sub>13</sub> O <sup>-</sup>			· · · · · · · · · · · · · · · · · · ·		$\Delta_f H(AH) = -311 \pm 1$	77PED/RYL
$Me_2C = C(iPr)O^-$ * -307±19 a 1.47	±0.05	1535±18 °	1505±23 <sup>h</sup>	PD	BDE(A-H)= 364±13	77ZIM/REE
C <sub>7</sub> H <sub>13</sub> O				Est	$\Delta_f H(AH) = -305 \pm 4$	
c-C <sub>6</sub> H <sub>11</sub> -CH <sub>2</sub> O <sup>-</sup> • -271±14 <sup>a</sup> 1.90	±0.19 d	1564±10 <sup>g</sup>	1536±8	IMRE	BDE(A-H)= 435±8	86TAF
C <sub>7</sub> H <sub>13</sub> S <sup>-</sup>				Est	$\Delta_f H(AH) = -116 \pm 4$	
c-C <sub>6</sub> H <sub>11</sub> -CH <sub>2</sub> S <sup>-</sup> • -171±16 a 2.09	±0.23 <sup>d</sup>	1475±12 g	1449±8	IMRE	BDE(A-H)= 364±10	86TAF
C <sub>7</sub> H <sub>15</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -369 \pm 4$	
(iPr) <sub>2</sub> CHO <sup></sup> • -348±15 <sup>a</sup> 2.1±	<sub>-0.2</sub> đ	1551±11 1549±10	1523±13 <sup>h</sup>	CIDC <sup>o</sup>	BDE(A-H) = 438±4	83BOA/HOU 83BOA/HOU

Table 2. Negative Ion Table - Continued

Ion $\triangle_f H(A^-)$ EA(A) $\triangle_f H(X \cdot Y^-)$ eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
C <sub>7</sub> H <sub>15</sub> O <sup>-</sup> Et <sub>3</sub> CO <sup>-</sup>			Est	$\Delta_f H(AH) = -366 \pm 4$ $BDE(A-H) = 440 \pm 4$	
* -344±15 <sup>a</sup> 2.1±0.2 <sup>d</sup>	1552±11 1549±10	1524±13 <sup>h</sup>	CIDC <sup>o</sup>		83BOA/HOU 83BOA/HOU
C <sub>7</sub> H <sub>15</sub> O <sup>-</sup> nBuC(Me) <sub>2</sub> O <sup>-</sup>		_	Est	$\Delta_f H(AH) = -373\pm 4$ $BDE(A-H) = 440\pm 4$	
* -348±15 <sup>a</sup> 2.0±0.2 <sup>d</sup>	1555±11 1552±10	1527±13 <sup>h</sup>	CIDC <sub>o</sub>		83BOA/HOU 83BOA/HOU
C <sub>7</sub> H <sub>15</sub> O <sup>-</sup> nC <sub>7</sub> H <sub>15</sub> O <sup>-</sup>				$\Delta_f H(AH) = -336\pm 2$ BDE(A-H) = 436±4	77PED/RYL
* -307±13 <sup>a</sup> 2.0±0.2 <sup>d</sup>	1559±11 1555±10	1531±13 <sup>h</sup>	CIDC <sup>o</sup>		83BOA/HOU 83BOA/HOU
C <sub>7</sub> H <sub>15</sub> O <sup>-</sup> tBuCH(Et)O <sup>-</sup>			Est	$\Delta_f H(AH) = -371 \pm 4$ $BDE(A-H) = 438 \pm 4$	
* -353±16 <sup>a</sup> 2.10±0.17 <sup>d</sup>	1548±12 <sup>g</sup>	1520±8 1519±8	IMRE IMRE <sup>0</sup>	•	79BAR/SCO 79BAR/SCO
$C_7H_{15}OS_2^-$ MeOH $\cdot \cdot 5$ ,5-diMe-1,3-dit	hianide <sup>—</sup>				
−287±38 <sup>c</sup>	62±10 g	34±7	IMRE		84CAL/ROZ
C <sub>7</sub> H <sub>17</sub> O <sub>2</sub> -					
EtOH··tBuCH <sub>2</sub> O <sup>-</sup> -605±24 <sup>c</sup>	80±10 g	53±8	IMRE		84CAL/ROZ
C <sub>7</sub> H <sub>17</sub> O <sub>2</sub> <sup>-</sup> nPrOH··tBuO <sup>-</sup>					
-615±23 <sup>c</sup>	85±10 g	57±8	IMRE		84CAL/ROZ
C <sub>8</sub> F <sub>4</sub> N <sub>2</sub> -					
pCN-perfluorobenzonitrile* -599±26 b 1.89±0.10	•		Est TDEq	$\Delta_f H(A) = -417 \pm 17$	87KEB/CHO
1.89±0.10			IMRE		86CHO/GRI
C <sub>8</sub> HN <sub>2</sub> O <sub>2</sub> -					
2,3-diCN-benzoquinonide 1.82±0.09			SI		66FAR/PAG
C <sub>8</sub> H <sub>3</sub> F <sub>5</sub> O <sup>-</sup>				4	
C <sub>6</sub> F <sub>5</sub> COCH <sub>3</sub> <sup></sup> · * -1143±26 <sup>b</sup> 0.94±0.10			Est TDEq	$\Delta_f H(A) = -1052 \pm 17$	87KEB/CHO
0.94±0.10			IMRE		86CHO/GRI
C <sub>8</sub> H <sub>3</sub> F <sub>6</sub> NO <sub>2</sub> -			<i></i>	A 11/4) 407C 1	
3,5-diCF <sub>3</sub> -nitrobenzene <sup>-</sup> · • -1449±14 b 1.79±0.10			Est . TDEq	$\Delta_f H(A) = -1276 \pm 4$	87KEB/CHO
					J., LLJD/ 0110

Table 2. Negative Ion Table - Continued

	Table 2. Negative Ion Table - Continued							
Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}$ $\Delta_f H(X \cdot Y^-)$ eV $\Delta H_{aff}(X)$		$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference			
C <sub>8</sub> H <sub>3</sub> F <sub>6</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -1485 \pm 17$				
3,5-diCF <sub>3</sub> -phenoxide				BDE(A-H)= 362±13				
* -1636±28 <sup>a</sup> 3.05±0.24 <sup>d</sup> 13	80±11 <sup>g</sup>	1351±8	IMRE		86TAF			
$C_8H_4F_3N^-$								
mCF <sub>3</sub> -benzonitrile <sup>-</sup>			Est	$\Delta_f H(A) = -434 \pm 8$				
•499±18 b 0.67±0.10			TDEq		87KEB/CHO			
0.67±0.09			TDEq		86CHO/KEB			
C <sub>8</sub> H <sub>4</sub> F <sub>3</sub> N <sup>-</sup>								
oCF <sub>3</sub> -benzonitrile			Est	$\Delta_f H(A) = -452 \pm 4$				
• -519±14 b 0.70±0.10			TDEq		87KEB/CHO			
C <sub>8</sub> H <sub>4</sub> F <sub>3</sub> N <sup>-</sup>					·····			
pCF <sub>3</sub> -benzonitrile <sup>-</sup>			Est	$\Delta_f H(A) = -452 \pm 4$				
* -525±14 b 0.76±0.10			TDEq		87KEB/CHO			
C <sub>8</sub> H <sub>4</sub> F <sub>3</sub> O <sub>2</sub> -			Est	$\Delta_f H(AH) = -976 \pm 8$				
mCF <sub>3</sub> -benzoate				$BDE(A-H) = 444 \pm 13$				
	92±11 g	1361±8	IMRE		86TAF			
C <sub>8</sub> H <sub>4</sub> F <sub>3</sub> O <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -976 \pm 8$				
pCF <sub>3</sub> -benzoate				$BDE(A-H) = 444\pm13$				
• -1115±19 <sup>a</sup> 3.78±0.24 <sup>d</sup> 139	91±11 g	1361±8	IMRE		86TAF			
C <sub>8</sub> H <sub>4</sub> F <sub>6</sub> N <sup>-</sup>			Est	$\Delta_f H(AH) = -1302 \pm 8$				
3,5-diCF <sub>3</sub> -anilide				BDE(A-H)= 368±13				
• -1377±19 a 2.33±0.24 d 145	66±11 <sup>g</sup>	1425±8	IMRE		86TAF			
C <sub>8</sub> H <sub>4</sub> NO <sub>2</sub> -			Est	$\Delta_f H(AH) = -158 \pm 13$				
mCN-benzoate				BDE(A-H)= 444±13				
• -309±23 a 3.90±0.24 d 137	79±11 g	1348±8	IMRE		77MCM/KEB			
C <sub>8</sub> H <sub>4</sub> NO <sub>2</sub> -			Est	$\Delta_f H(AH) = -158 \pm 13$				
pCN-benzoate				BDE(A-H) = 444±13				
• -314±23 a 3.95±0.24 d 137	74±11 g	1345±8	IMRE		77MCM/KEB			
C <sub>8</sub> H <sub>4</sub> N <sub>2</sub> <sup>-</sup>	<del></del>				· , · · · · · · · · · · · · · · · · · ·			
mCN-benzonitrile-				$\Delta_f H(A) = 363 \pm 2$	80SAT/SAK			
• 275±12 b 0.91±0.10			TDEq	• • •	87КЕВ/СНО			
0.91±0.09			TDEq		86CHO/KEB			
C <sub>8</sub> H <sub>4</sub> N <sub>2</sub> <sup>-</sup>	***************************************							
o-CN-benzonitrile			Est2	$\Delta_f H(A) = 363 \pm 13$				
• 271±22 b 0.95±0.10			TDEq		87KEB/CHO			
0.95±0.09			TDEq		86CHO/KEB			
1.1±0.1		·	SI		67FAR/PAG			
C <sub>8</sub> H <sub>4</sub> N <sub>2</sub> -								
p-CN-benzonitrile-				$\Delta_f H(A) = 363 \pm 8$				
• 257±18 b 1.10±0.10			TDEq		87KEB/CHO			
1.10±0.09			TDEq		86CHO/KEB			

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Table 2. Negative Ion Table - Continued

	H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method Comment	Reference
C <sub>8</sub> H <sub>4</sub> O <sub>3</sub> <sup>-</sup> phthalic anhydride <sup>-</sup> -487±12 b 1.21±0.10			TDEq	87КЕВ/СНО
* 1.20±0.05			IMRE	85FUK/MCI
C <sub>8</sub> H <sub>5</sub> <sup>-</sup> PhC=C <sup>-</sup> * 327±15 <sup>a</sup> 3.25±0.36 <sup>d</sup>	1551±13 <sup>g</sup>	1518±8 1518±8	$\Delta_f H(AH) = 306\pm 2$ $BDE(A-H) = 552\pm 21$ IMRE IMRE	85DAVIALL 79BAR/SCO 79BAR/SCO
C <sub>8</sub> H <sub>5</sub> CIN <sup>-</sup>			Est $\Delta_f H(AH) = 156\pm4$	
mCi-C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup> * 68±18 <sup>a</sup>	1441±13 <sup>g</sup>	1412±8	IMRE	81FUJ/MCI
C <sub>8</sub> H <sub>5</sub> CIN <sup>-</sup> pCI-C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup>			Est $\Delta_f H(AH) = 156\pm4$	
* 70±18 a	1444±13 g	1416±8	IMRE	81FUJ/MCI
C <sub>8</sub> H <sub>5</sub> FN <sup>-</sup>			Est $\Delta_f H(AH) = -7\pm 4$	
mF-C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup> • -70±19 <sup>a</sup>	1467±15 g	1439±8	IMRE	86TAF
C <sub>8</sub> H <sub>5</sub> FN <sup>-</sup>			Est $\Delta_f H(AH) = -7\pm4$	
pF-C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup> * -77±15 <sup>a</sup>	1460±11 <sup>g</sup>	1433±8	IMRE	86TAF
C <sub>8</sub> H <sub>5</sub> F <sub>3</sub> NO			Est2 $\Delta_f H(AH) = -706 \pm 13$	
PhN = $C(CF_3)O^4$ * $-841\pm23^a$	1395±11 <sup>g</sup>	1366±8	IMRE	86TAF
C <sub>8</sub> H <sub>5</sub> NO <sup>-</sup> mCHO-benzonitrile <sup>-</sup> * 2±14 b 1.00±0.10 1.01±0.09			Est Δ <sub>f</sub> H(A)= 99±4 TDEq TDEq	87KEB/CHO 86CHO/KEB
C <sub>8</sub> H <sub>5</sub> NO <sup>-</sup> pCHO-benzonitrile <sup>-</sup> • -19±14 <sup>b</sup> 1.22±0.10 1.22±0.09			Est $\Delta_f H(A) = 99\pm 4$ TDEq TDEq	87KEB/CHO 86CHO/KEB
C <sub>8</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> -			Est $\Delta_f H(AH) = 171 \pm 4$	
mNO <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup> * 53±19 <sup>n</sup>	1412±15 g	1384±8	IMRE	86TAF
C <sub>8</sub> H <sub>5</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup> pNO <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup>			Est $\Delta_f H(AH) = 171 \pm 4$	
* 19±18 <sup>a</sup>	1378±13 g	1350±8	IMRE	81FUJ/MCI
C <sub>8</sub> H <sub>5</sub> O <sub>3</sub> - pCHO-benzoate-			Est $\Delta_f H(AH) = -414\pm 8$ $BDE(A-H) = 444\pm 13$	
* -550±19 <sup>a</sup> 3.74±0.24 <sup>d</sup>	1395±11 <sup>g</sup>	1363±8	IMRE	86TAF

Table 2. Negative Ion Table - Continued

C <sub>8</sub> H <sub>6</sub> CIO-		$\Delta G_{aff}(X \cdot \cdot Y^{-})$		Comment	Reference
$mC1-C_6H_4C(=CH_2)O^-$			Est	$\Delta_f H(AH) = -116 \pm 8$	
* -152±18 <sup>a</sup>	1495±10 g	1466±8	IMRE		79BAR/SCO
C <sub>8</sub> H <sub>6</sub> Cl <sub>2</sub> O <sub>2</sub> -			F-40	A 17(A)	
2,5-diCl-3,6-diMe-benzoqui • -437±21 b 2.14±0.05	none		Est2 IMRE	$\Delta_f H(A) = -230 \pm 17$	85FUK/MCI
C <sub>8</sub> H <sub>6</sub> F <sub>3</sub> -			Est	$\Delta_f H(AH) = -622 \pm 8$	
mCF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> - -608±18 <sup>a</sup>	1545±10 g	1515±8	IMRE		83CAL/BAR
C <sub>8</sub> H <sub>6</sub> F <sub>3</sub> - pCF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> -			Est	$\Delta_f H(AH) = -622 \pm 8$	
* -617±18 <sup>a</sup>	1536±10 g	1505±8	IMRE		83CAL/BAR
C8H6F3O2					
pSO <sub>2</sub> CF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>	1454±11 g	1425±8	IMRE		86TAF
C8H6NT			Est	$\Delta_f H(AH) = 186 \pm 4$	
* 123±18 <sup>a</sup>	1467±13 g	1440±8	IMRE		81FUJ/MCI
120110	1471±13 g	1443±8	IMRE		78CUM/KEB
		1451±8	IMRE		79BAR/SCO
C <sub>8</sub> H <sub>6</sub> N <sup>-</sup>				$\Delta_f H(AH) = 157 \pm 5$	77PED/RYL
* 89±15 <sup>a</sup>	1461±11 g	1431±8	IMRE		86TAF
C <sub>8</sub> H <sub>6</sub> N <sup>-</sup>			Est	Δ <sub>f</sub> H(AH)== 183±8	
mCN-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> • 198±18 <sup>a</sup>	1545±10 g	1515±8	IMRE		83CAL/BAR
C <sub>8</sub> H <sub>6</sub> N <sup>-</sup>			Est	$\Delta_f H(AH) = 182 \pm 8$	
pCN-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> • 162±19 <sup>a</sup>	1510±11 <sup>g</sup>	1479±10	IMRE		83CAL/BAR
C <sub>8</sub> H <sub>6</sub> O <sub>2</sub> -			<b>-</b>	A 11/AL 457 C	
p-CHO-benzaldehyde <sup></sup> 211 b 0.6			Est ECD	$\Delta_f H(A) = -157 \pm 8$	68KUH/LEV
C <sub>8</sub> H <sub>7</sub> CIO		· · · · · · · · · · · · · · · · · · ·	P 1	A 11/A) 447 C	# 30 d
mCl-acetophenone <sup>-</sup> . -173±9 b 0.583±0.006			Est ECD	$\Delta_f H(A) = -117 \pm 8$	69STE/WEN
C <sub>8</sub> H <sub>7</sub> ClO				4.114	
pCl-acetophenone <sup></sup> . -172±9 b 0.567±0.005			Est ECD	$\Delta_f H(A) = -117 \pm 8$	69STE/WEN

Table 2. Negative Ion Table - Continued

		Z. Regative 10.			
	H <sub>acid</sub> (AH) <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>8</sub> H <sub>7</sub> ClO <sub>2</sub> <sup>-</sup>					
2-Cl-3,6-diMe-benzoquinone	· <del>~</del> ·		Est2	$\Delta_f H(A) = -212 \pm 17$	
* -398±21 b 1.93±0.05			IMRE	,	85FUK/MCI
C <sub>8</sub> H <sub>7</sub> FO					
mF-acetophenone			Est	$\Delta_f H(A) = -280 \pm 8$	
-336±11 <sup>b</sup> 0.58±0.03			ECD		75WEN/KAO
C <sub>8</sub> H <sub>7</sub> FO					
oF-acetophenone.			Est	$\Delta_f H(A) = -280 \pm 21$	
-323±22 b 0.442±0.009			ECD		75WEN/KAO
C <sub>8</sub> H <sub>7</sub> FO			<b></b>	4.440	
pF-acetophenone <sup></sup> . -318±10 b 0.40±0.01			Est	$\Delta_f H(A) = -280 \pm 8$	TENUDNIU A O
-318±10 ° 0.40±0.01			ECD		75WEN/KAO
C <sub>8</sub> H <sub>7</sub> N <sup>-</sup> oMe-benzonitrile <sup>-</sup>			Est.	A 1//A) 470.4	
* 110±11 b 0.70±0.10			Est TDEq	$\Delta_f H(A) = 178 \pm 1$	87КЕВ/СНО
110±11 0.70±0.10 110±9 b 0.70±0.09			TDEq		86CHO/KEB
					- COCHO/ALD
C <sub>8</sub> H <sub>7</sub> N <sup>-</sup>			_		
pMe-benzonitrile.			Est	$\Delta_f H(A) = 182 \pm 1$	
• 109±9 b 0.76±0.09			TDEq		86CHO/KEB
C <sub>8</sub> H <sub>7</sub> NO <sub>3</sub> <sup>-</sup>					
mCOMe-nitrobenzene			Est	$\Delta_f H(A) = -103 \pm 4$	0.000
* -229±14 <sup>b</sup> 1.31±0.10		<u> </u>	TDEq		87KEB/CHO
C <sub>8</sub> H <sub>7</sub> NO <sub>3</sub> <sup>-</sup>					
oCOMe-nitrobenzene			Est2	$\Delta_f H(A) = -84 \pm 8$	
* -217±18 <sup>b</sup> 1.38±0.10			TDEq		87KEB/CHO
C <sub>8</sub> H <sub>7</sub> NO <sub>3</sub> <sup>-</sup>					
pCOMe-nitrobenzene-			Est	$\Delta_f H(A) = -103 \pm 4$	
* -252±14 <sup>b</sup> 1.55±0.10			TDEq		87KEB/CHO
C <sub>8</sub> H <sub>7</sub> O <sup>-</sup>				$\Delta_f H(AH) = -87 \pm 2$	77PED/RYL
$CH_2 = C(Ph)O^{-1}$	4845 4:0	1.100 5		$BDE(A-H) = 399 \pm 18$	50D : D // C -
* -105±13 <sup>a</sup>	1512±11 <sup>g</sup>	1483±8	IMRE		79BAR/SCO
* 2.06±0.08 -101±13 <sup>a</sup>	1516±11 g	1497.49	PD IMRE		77ZIM/REE
-101±12	TOTOTIT 6	1487±8 1491±8	IMRE <sup>O</sup>		78CUM/KEB 79BAR/SCO
		147110	IMICE		
C <sub>8</sub> H <sub>7</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -53\pm 4$	
PhCH = CHO <sup>-</sup> * 2 10±0 08			רומ		77ZIM/REE
* 2.10±0.08		-,	PD		//ZIMI/REE
C <sub>8</sub> H <sub>7</sub> O <sup>-</sup>			Est	$\Delta_f H(AH) = -71 \pm 8$	
mCHO-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub>	1554,119	1524 . 8	MDD		92CAL (DAD
* -47±19 <sup>a</sup>	1554±11 <sup>g</sup>	1524±8	IMRE		83CAL/BAR

Table 2. Negative Ion Table - Continued

T- A TV A T		AC (477)	1/	Comment	Def
	AH <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y)$	Method	Comment	Reference
C <sub>8</sub> H <sub>7</sub> O <sup>-</sup> pCHO-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -75 \pm 8$	
* -100±21 <sup>a</sup>	1505±12 g	1475±10	IMRE		86TAF
C <sub>8</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> PhCH <sub>2</sub> CO <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -320\pm 4$ $BDE(A-H) = 444\pm 8$	
* -423±15 <sup>a</sup> 3.40±0.20 <sup>d</sup>	1428±11 <sup>g</sup>	1398±8	IMRE		86TAF
C <sub>8</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> mCOMe-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -264 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -361±18 <sup>a</sup> 2.50±0.19 <sup>d</sup>	1433±10 <sup>g</sup>	1404±8	IMRE		81FUJ/MCI
C <sub>8</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> mMe-benzoate <sup>-</sup>			•	$\Delta_f H(AH) = -329 \pm 1$ BDE(A-H) = 444 \pm 13	76COLJIM
* -437±12 <sup>a</sup> 3.46±0.24 <sup>d</sup>	1422±11 <sup>g</sup>	1391±8	IMRE	00L(N-11) - 444±10	77MCM/KEB
C <sub>8</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> oMe-benzoate <sup>-</sup>				$\Delta_f H(AH) = -320 \pm 1$	76COUJIM
* -436±13 <sup>a</sup>	1415±12 <sup>g</sup>	1384±8	IMRE		77MCM/KEB
C <sub>8</sub> H <sub>7</sub> O <sub>2</sub> -			Est	$\Delta_f H(AH) = -264 \pm 8$	
pCOMe-phenoxide <sup>-</sup> • -390±19 <sup>a</sup>	1404±11 <sup>g</sup>	1375±8	IMRE		81FUJ/MCI
C <sub>8</sub> H <sub>7</sub> O <sub>2</sub> -				$\Delta_f H(AH) = -332 \pm 1$	76COUJIM
pMe-benzoate <sup></sup> -440±12 <sup>a</sup> 3.46±0.24 <sup>d</sup>	1422±11 <sup>g</sup>	1392±8	IMRE	BDE(A-H) = 444±13	77MCM/KEB
C <sub>8</sub> H <sub>7</sub> O <sub>3</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = -468 \pm 8$ $BDE(A-H) = 362 \pm 8$	
mCO <sub>2</sub> Me-phenoxide <sup>-</sup> • -559±18 <sup>a</sup> 2.44±0.19 <sup>d</sup>	1439±10 g	1410±8	IMRE	BDE(A-N) = 302±0	81FUJ/MCI
C <sub>8</sub> H <sub>7</sub> O <sub>3</sub> -				$\Delta_f H(AH) = -446 \pm 1$ $BDE(A-H) = 444 \pm 13$	78COLJIM
mOMe-benzoate <sup>-</sup> -559±12 <sup>a</sup> 3.51±0.24 <sup>d</sup>	1417±11 g	1386±8	IMRE	BDE(A-H)= 444±13	77MCM/KEB
C <sub>8</sub> H <sub>7</sub> O <sub>3</sub> -			Est	Δ <sub>f</sub> H(AH)= -452±8	
oOMe-benzoate <sup>-</sup> • -567±19 <sup>a</sup>	1415±11 g	1386±8	IMRE		77МСМ/КЕВ
C <sub>8</sub> H <sub>7</sub> O <sub>3</sub> -			Est	$\Delta_f H(AH) = -468 \pm 8$	
pCO <sub>2</sub> Me-phenoxide <sup>-</sup> * -587±19 <sup>a</sup>	1411±11 g	1382±8	IMRE		81FUJ/MCI
C <sub>8</sub> H <sub>8</sub> -				A 1//A) 007 4	***************************************
cyclooctatetraene <sup></sup> . 242±5 <sup>b</sup> 0.58±0.04			ECD	$\Delta_f H(A) = 297 \pm 1$	77PED/RYL 69WEN/RIS
< 0.8			PD		79GYG/PET

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C8H8CIO- PhCOMe · · C1-					***************************************
		40	TDEq		82FRE/IKU
C8H8NO- PhN=C(Me)O-				$\Delta_f H(AH) = -129 \pm 1$	77PED/RYL
* -205±11 <sup>8</sup>	1454±10 g 1476±10 g	1425±8 1447±8	IMRE IMRE		86TAF 78CUM/KEB
CgHgNO- mCOMe-anilide			Est	$\Delta_f H(AH) = -100 \pm 4$ $BDE(A-H) = 368 \pm 13$	1000
• -125±15 <sup>a</sup> 1.82±0.24	1505±11 g	1474±8	IMRE		86TAF
C <sub>8</sub> H <sub>8</sub> NO <sup>-</sup> pCOMe-anilide <sup>-</sup>			Est2	$\Delta_f H(AH) = -88 \pm 4$	
* -148±15 <sup>a</sup>	1470±11 g	1439±8	IMRE		86TAF
C <sub>8</sub> H <sub>8</sub> NO <sub>2</sub> <sup>-</sup> mCO <sub>2</sub> Me-anilide <sup>-</sup>			Est	$\Delta_f H(AH) = -300 \pm 4$ $BDE(A-H) = 368 \pm 13$	
* -322±15 <sup>a</sup> 1.78±0.24	d 1509±11 g	1478±8	IMRE		86TAF
C <sub>8</sub> H <sub>8</sub> NO <sub>2</sub> - pCO <sub>2</sub> Me-anilide-			Est	$\Delta_f H(AH) = -300 \pm 4$	
* -356±15 <sup>a</sup>	1475±11 g	1444±8	IMRE		86TAF
C <sub>8</sub> H <sub>8</sub> O <sup>-</sup> acetophenone <sup>-</sup> · -119±2 <sup>b</sup> 0.334±0.0 0.334±0.0			ECD ECD	$\Delta_f H(A) = -87 \pm 2$	77PED/RYL 75WEN/KAO 67WEN/CHE
C <sub>8</sub> H <sub>8</sub> O <sup>-</sup> mMe-benzaldehyde <sup>-</sup> · -110±10 <sup>b</sup> 0.41±0.01		1-7-51	Est ECD	$\Delta_f H(A) = -71 \pm 8$	75WEN/KAO
C <sub>8</sub> H <sub>8</sub> O <sup>-</sup> pMe-benzaldehyde <sup>-</sup> · -111±10 <sup>b</sup> 0.37±0.02			Est ECD	$\Delta_f H(A) = -75 \pm 8$	75WEN/KAO
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> 2,5-diMe-benzoquinone <sup>-</sup> * -358±18 <sup>b</sup> 1.77±0.10 1.72±0.11			Est2 TDEq IMRE	$\Delta_f H(A) = -187 \pm 8$	87KEB/CHO 85GRI/CAL
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> 2,6-diMe-benzoquinone <sup>-</sup> -359±18 <sup>b</sup> 1.78±0.10 1.67±0.05			Est TDEq IMRE	$\Delta_f H(A) = -187 \pm 8$	87KEB/CHO 85FUK/MCI
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> mOMe-benzaldehyde <sup>-</sup> · -224±13 <sup>b</sup> 0.43±0.04			Est ECD	$\Delta_f H(A) = -182\pm 8$	75WEN/KAO

Table 2. Negative Ion Table - Continued

		Table	2. Negative 10	i labie	- Continued	
Ion $\Delta_f H(A^-)$ E $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> methyl benzoate <sup>-</sup> -305 b 0	-, .2			ECD	$\Delta_f H(A) = -288 \pm 7$	77PED/RYL 68KUH/LEV
C <sub>8</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> oOH-acetophene • -184±17 b 0				Est2 IMRE	$\Delta_f H(A) = -100 \pm 13$	85FUK/MCI
C <sub>8</sub> H <sub>8</sub> O <sub>4</sub> <sup>-</sup> 2,6-diMeO-benz	oquinone .73±0.10	<sub>5</sub>		TDEq		87KEB/CHO
C <sub>8</sub> H <sub>9</sub> <sup>-</sup> 2-methylenenorb	orn-5-e	n-3-ide <sup>-</sup> 1632±10 g	1603±8	IMRB		86LEE/SQU
C <sub>8</sub> H <sub>9</sub> - PhCHMe- * 88±10 <sup>a</sup> 0.	.80±0.19 <sup>°</sup>	1 1589±10 g	1562±8 1556±8	IMRE IMRE <sup>0</sup>	Δ <sub>f</sub> H(AH)= 29 BDE(A-H)= 354±8	77PED/RYL 81ROB/STE 79BAR/SCO 79BAR/SCO
C <sub>8</sub> H <sub>9</sub> <sup>-</sup> bicyclo[3.2.1]octa-	-2,6-dier	1-4-ide <sup>-</sup> 1588±11 <sup>g</sup>	1559±8	IMRE		86LEE/SQU
C <sub>8</sub> H <sub>9</sub> <sup>-</sup> mMe-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> 82±12 a 0.	- 89±0.22 <sup>©</sup>	1 1595±12 g	1564±10	IMRE	$\Delta_f H(AH) = 17$ $BDE(A-H) = 368\pm9$	77PED/RYL 86HAY/KRU 83CAL/BAR
C <sub>8</sub> H <sub>9</sub> <sup>-</sup> pMe-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> 86±12 a 0.	84±0.22 <sup>d</sup>	1598±11 <sup>g</sup>	1568±10	IMRE	$\Delta_f H(AH) = 18\pm 1$ $BDE(A-H) = 367\pm 10$	77PED/RYL 86HAYIKRU 79BAR/SCO
				Est2 TDEq IMRE IMRE	$\Delta_f H(A) = 13\pm13$	87KEB/CHO 85GRI/CAL 85FUK/MCI
C <sub>8</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> 1,2-diMe-4-nitro -85±13 b 0.8				Est IMRE	$\Delta_f H(A) = -1 \pm 8$	85FUK/MCI
C <sub>8</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> 1,3-diMe-2-nitro -33±17 b 0.5		-	Marie (1964) - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964 - 1964	Est IMRE	$\Delta_f H(A) = 40\pm13$	85FUK/MCI
C <sub>8</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> 1,3-diMe-4-nitrol -60±13 b 0.8		•		Est IMRE	$\Delta_f H(A) = 20\pm 8$	85FUK/MCI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CgHgO- mEt-phenoxide-				$\Delta_f H(AH) = -146 \pm 2$ $BDE(A-H) = 362 \pm 8$	77PED/RYL
* -215±11 <sup>a</sup> 2.20±0.19 <sup>c</sup>	1461±10 g	1433±8	IMRE		81FUJ/MCI
C <sub>8</sub> H <sub>9</sub> O <sup>-</sup> pEt-phenoxide <sup>-</sup>				$\Delta_f H(AH) = -144 \pm 1$ $BDE(A-H) = 362 \pm 8$	77PED/RYL
* -210±10 <sup>a</sup> 2.18±0.19 <sup>c</sup>	1464±10 g	1435±8	IMRE	BBE(N-11) = 002±0	81FUJ/MCI
C <sub>8</sub> H <sub>9</sub> OS <sup>-</sup>			Est	$\Delta_f H(AH) = -32 \pm 8$	
pSOMe-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> • -31±19 <sup>a</sup>	1531±11 g	1503±8	IMRE		86TAF
C <sub>8</sub> H <sub>9</sub> O <sub>2</sub> S <sup>-</sup>			Est	$\Delta_f H(AH) = -280 \pm 4$	
PhSO <sub>2</sub> CHMe <sup>-</sup> • -283±13 <sup>a</sup>	1527±8 g	1495±8	IMRE		78CUM/KEB
C <sub>8</sub> H <sub>9</sub> O <sub>2</sub> S <sup>-</sup>				$\Delta_f H(AH) = -273 \pm 3$	77PED/RYL
pSO <sub>2</sub> Me-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> • -302±14 <sup>a</sup>	1501±11 <sup>g</sup>	1473±8	IMRE		86TAF
C <sub>8</sub> H <sub>9</sub> O <sub>3</sub> <sup>-</sup> PhOH··McCO <sub>2</sub> <sup>-</sup>					<u>-</u>
Thorry MeCO <sub>2</sub>	109±4	79±7	TDAs		86MEO/SIE2
C <sub>8</sub> H <sub>10</sub> Cl <sup>-</sup> PhEt··Cl <sup>-</sup>					
		21	TDEq		82FRE/IKU
C <sub>8</sub> H <sub>10</sub> Cl <sup>-</sup> m-xylene··Cl <sup>-</sup>					
m xylone or		16	TDEq		82FRE/IKU
C <sub>8</sub> H <sub>10</sub> Cl <sup>-</sup> p-xylene··Cl <sup>-</sup>					
p-xylene · · Ci		16	TDEq		82FRE/IKU
C <sub>8</sub> H <sub>10</sub> N <sup>-</sup> PhNEt				$\Delta_f H(AH) = 56\pm6$ $BDE(A-H) = 366\pm8$	77PED/RYL
* 50±17 a 1.60±0.20 d	1523±11 <sup>g</sup>	1493±8	IMRE	202(A 1) - 00010	86TAF
C <sub>8</sub> H <sub>10</sub> NO <sup>-</sup> mNMe <sub>2</sub> -phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -84 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -148±18 <sup>a</sup> 2.15±0.19 <sup>d</sup>	1466±10 g	1437±8	IMRE	BBE(A-1)- 30210	81FUJ/MCI
C <sub>8</sub> H <sub>10</sub> NO <sup>-</sup>			Est	$\Delta_f H(AH) = -84 \pm 8$	
pNMe <sub>2</sub> -phenoxide <sup>-</sup> • -144±18 <sup>a</sup>	1470±10 g	1441±8	IMRE		81FUJ/MCI
C <sub>8</sub> H <sub>10</sub> N <sub>2</sub> O <sub>2</sub> <sup>-</sup> mNMe <sub>2</sub> -nitrobenzene <sup>-</sup> . * -21±6 b 0.92±0.05			IMRE	$\Delta_{f}H(A)=67\pm2$	84FURIMUR 85FUK/MCI

Table 2. Negative Ion Table - Continued

Table 2. Negative Ion Table - Continued							
	H <sub>acid</sub> (AH) I <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	I Comment	Reference		
C <sub>8</sub> H <sub>11</sub> <sup>-</sup> 2-methylenenorbornan-3-ide	·		Est2	$\Delta_f H(AH) = 39 \pm 13$			
* 138±18 <sup>a</sup>	1629±5 g	1600±3	IMRE		86LEE/SQU		
C <sub>8</sub> H <sub>11</sub> <sup>-</sup> bicyclo[3.2.1]oct-2-en-4-ide	-		Est2	$\Delta_f H(AH) = 13\pm17$			
* 117±22 <sup>a</sup>	1635±5 g	1604±3	IMRE		86LEE/SQU		
C <sub>8</sub> H <sub>11</sub> <sup>-</sup> cyclooctadienide <sup>-</sup>			Est2	$\Delta_f H(AH) = 42 \pm 13$			
88±29 <sup>a</sup>	1576±16 g	1548±13	IMRB	between EtOH, nPrOH	86LEE/SQU		
C <sub>8</sub> H <sub>11</sub> O <sup>-</sup> 4,4-diMe-cyclohexenone-6-e	nolate		Est2	$\Delta_f H(AH) = -180 \pm 13$			
• -181±22 a	1529±10 g	1497±8 1500±8	IMRE IMRE	ס	86BAR/KIP 86BAR/KIP		
C <sub>8</sub> H <sub>11</sub> O <sub>2</sub> <sup>-</sup> 5,5-diMe-1,3-cyclohexandion	-2-ide		Est	$\Delta_f H(AH) = -287 \pm 13$			
* -399±22 <sup>a</sup>	1418±10 g	1385±8	IMRE	Acid: dimedone	78CUM/KEB		
C <sub>8</sub> H <sub>11</sub> O <sub>2</sub> - EtOH··PhO-							
	81±4	47±7	TDAs		86MEO/SIE2		
$C_8H_{12}B^-$ $Me_2C(CH = CH)_2BCH_2^-$			Est	$\Delta_f H(AH) = 86 \pm 13$			
100±32 <sup>a</sup>	1544±19 <sup>g</sup>	1515±17	IMRB		77SUL		
C <sub>8</sub> H <sub>13</sub> <sup>-</sup> cyclooctenide <sup>-</sup>				$\Delta_f H(AH) = -27 \pm 1$	77PED/RYL		
60±26 <sup>a</sup>	1617±25 <sup>g</sup>	1586±21	IMRB	Between EtOH, nPrOH	86LEE/SQU		
C <sub>8</sub> H <sub>13</sub> O <sup>-</sup> cycloctanone enolate <sup>-</sup>				$\Delta_f H(AH) = -272 \pm 5$	77PED RYL		
• 1.63±0.06			PD		78ZIM/JAC		
C <sub>8</sub> H <sub>13</sub> O <sub>2</sub> -			Est	$\Delta_f H(AH) = -523 \pm 8$ $BDE(A, H) = -444 + 3$			
cC <sub>6</sub> H <sub>11</sub> -CH <sub>2</sub> CO <sub>2</sub> - • -609±19 <sup>a</sup> 3.23±0.20 <sup>d</sup>	1444±11 g	1415±8	IMRE	BDE(A-H)= 444±8	86TAF		
C <sub>8</sub> H <sub>15</sub> O <sub>4</sub> <sup>−</sup> iPrCO <sub>2</sub> H··iPrCO <sub>2</sub> <sup>−</sup>							
	125±4	83±7	TDAs		86MEO/SIE2		
C <sub>8</sub> H <sub>17</sub> O <sup>-</sup> nC <sub>8</sub> H <sub>17</sub> O <sup>-</sup>				$\Delta_f H(AH) = -355 \pm 1$ $BDE(A-H) = 436 \pm 4$	77PED/RYL		
* -330±12 <sup>a</sup> 2.0±0.2 <sup>d</sup>	1556±11 1553±10	1528±13 <sup>h</sup>	CIDCO		83BOA/HOU 83BOA/HOU		

Table 2. Negative Ion Table - Continued

	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Υ)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>8</sub> H <sub>17</sub> O <sup>-</sup> tBuCH(iPr)O <sup>-</sup>			Est	$\Delta_f H(AH) = -392 \pm 4$ $BDE(A-H) = 438 \pm 4$	
* -379±16 a 2.15±0.17 d	1543±12 <sup>g</sup>	1515±8 1514±8	IMRE IMRE		79BAR/SCO 79BAR/SCO
C <sub>8</sub> H <sub>17</sub> O <sub>5</sub> - MeO(CH <sub>2</sub> CH <sub>2</sub> O) <sub>2</sub> Me··M	eCO <sub>2</sub> -				
. 2 2 72	63±4	40±7	TDAs		86MEO/SIE2
C <sub>8</sub> H <sub>19</sub> O <sub>2</sub> <sup>−</sup> nPrOH··tBuCH <sub>2</sub> O <sup>−</sup> -627±25 <sup>c</sup>	83±10 <sup>g</sup>	55±8	IMRE		84CAL/ROZ
C <sub>8</sub> H <sub>19</sub> O <sub>2</sub> -					
tBuOH··tBuO <sup>-</sup> -673±26 <sup>c</sup>	85±10 g	58±8	IMRE		84CAL/ROZ
C9HN5 <sup>-</sup> 2,3,5,6-tetracyanopyridine <sup>-</sup> 2.17±0.07			<i>Est</i> SI	$\Delta_f H(A) = 669 \pm 17$	67FAR/PAG
C <sub>9</sub> H <sub>3</sub> F <sub>6</sub> N <sup>-</sup> 3,5-diCF <sub>3</sub> -benzonitrile <sup>-</sup> * -1235±14 <sup>b</sup> 1.14±0.10			Est TDEq	$\Delta_f H(A) = -1125 \pm 4$	87KEB/CHO
C <sub>9</sub> H <sub>3</sub> F <sub>6</sub> O <sub>2</sub> <sup>-</sup> 3,5-diCF <sub>3</sub> -benzoate <sup>-</sup>			Est	$\Delta_f H(AH) = -1637 \pm 8$ $BDE(A-H) = 444 \pm 13$	
* -1810±19 <sup>a</sup> 4.13±0.24 <sup>d</sup>	1357±11 <sup>g</sup>	1328±8	IMRE		86TAF
C <sub>9</sub> H <sub>4</sub> N <sup>-</sup> pCN-C <sub>6</sub> H <sub>4</sub> C≡C <sup>-</sup>	_		Est	$\Delta_f H(AH) = 443\pm 8$ $BDE(A-H) = 552\pm 21$	
* 383±18 <sup>a</sup> 4.08±0.32 <sup>d</sup>	1471±10 g	1438±8	IMRE		86TAF
C <sub>9</sub> H <sub>5</sub> CrO <sub>3</sub> <sup>-</sup> (CO) <sub>3</sub> CrC <sub>6</sub> H <sub>5</sub> <sup>-</sup>	455. 24			$\Delta_f H(AH) = -350 \pm 9$	77PED/RYL
-326±30 <sup>a</sup>	1554±21		IMRB		85LAN/SQU
C <sub>9</sub> H <sub>5</sub> F <sub>3</sub> N <sup>-</sup> mCF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup>			Est	$\Delta_f H(AH) = -485 \pm 4$	
* -585±19 <sup>a</sup>	1431±15 <sup>g</sup>	1403±8	IMRE		86TAF
C <sub>9</sub> H <sub>5</sub> F <sub>3</sub> N <sup>-</sup> pCF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup>			Est	$\Delta_f H(AH) = -485 \pm 4$	
* -595±19 <sup>a</sup>	1420±15 <sup>g</sup>	1393±8	IMRE		86TAF
C <sub>9</sub> H <sub>5</sub> F <sub>6</sub> <sup>-</sup> 3,5-diCF <sub>3</sub> -C <sub>6</sub> H <sub>3</sub> CH <sub>2</sub> <sup>-</sup>				$\Delta_f H(AH) = -1320 \pm 8$	
* -1340±19 <sup>a</sup> 1.76±0.24 <sup>d</sup>	1510±11 <sup>g</sup>	1482±8	IMRE	BDE(A-H)= 368±13	86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ E $\Delta_f H(X \cdot Y^-)$	A(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>9</sub> H <sub>5</sub> N <sub>2</sub> <sup>-</sup> Ph-C(CN) <sub>2</sub> <sup>-</sup>		1348±11 <sup>g</sup>	1317±8	IMRE		86TAF
C <sub>9</sub> H <sub>5</sub> N <sub>2</sub> -				Est	$\Delta_f H(AH) = 322\pm 4$	
mCN-C <sub>6</sub> H <sub>4</sub> CHC  * 211±18 <sup>a</sup>	N_	1419±13 <sup>g</sup>	1390±8	IMRE		81FUJ/MCI
C <sub>9</sub> H <sub>5</sub> N <sub>2</sub> -				Est	$\Delta_f H(AH) = 322\pm 4$	
pCN-C <sub>6</sub> H <sub>4</sub> CHCN * 192±18 <sup>2</sup>	N	1400±13 <sup>g</sup>	1372±8	IMRE		81FUJ/MCI
C9H6BrO2 <sup>-</sup> 4-Br-cubyl-CO2 3.6	- 61±0.21	d 1407±12 g	1378±8	IMRE	BDE(A-H) = 444±8	86TAF
C <sub>9</sub> H <sub>6</sub> F <sub>3</sub> O <sup>-</sup>				Est	$\Delta_f H(AH) = -715 \pm 4$	
pCOCF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> C • -776±15 <sup>a</sup>	H <sub>2</sub>	1470±11 g	1439±8	IMRE		86TAF
C <sub>9</sub> H <sub>6</sub> N <sup>-</sup>					$\Delta_f H(AH) = 211 \pm 1$	79VIS
quinolinide <sup>—</sup> * 289±9 <sup>a</sup>		1608±8	1572±8	TDEq		87MEO
C <sub>9</sub> H <sub>6</sub> NO				Est2	$\Delta_f H(AH) = 15 \pm 13$	***************************************
pCOCN-C <sub>6</sub> H <sub>4</sub> CF • -69±23 <sup>a</sup>	<sup>1</sup> 2	1446±11 <sup>g</sup>	1418±8	IMRE		86TAF
C <sub>9</sub> H <sub>7</sub> <sup>-</sup> indenide <sup>-</sup> • 106±12 a 1.5	98±0.24 °	i 1473±11 <sup>g</sup>	1442±8	IMRE	$\Delta_f H(AH) = 163\pm 1$ $BDE(A-H) = 351\pm 13$	80KUD KUD 82MCM GOL 86TAF
C9H7F3O- mCF3-acetopheno -869±9 b 0.6	one <sup></sup> . 663±0.00	9		Est ECD	$\Delta_f H(A) = -805 \pm 8$	75WEN/KAO
C <sub>9</sub> H <sub>7</sub> F <sub>3</sub> O <sup>-</sup> oCF <sub>3</sub> -acetopheno -867±9 b 0.6	ne <sup></sup> 42±0.00	9		Est ECD	$\Delta_f H(A) = -805 \pm 8$	75WEN/KAO
C <sub>9</sub> H <sub>7</sub> F <sub>3</sub> O <sup>-</sup> pCF <sub>3</sub> -acetopheno -867±9 b 0.6	ne <sup>—,</sup> 42±0.00	9		Est ECD	$\Delta_f H(A) = -805 \pm 8$	75WEN/KAO
	rile <sup>—.</sup> 3±0.10 2±0.09			Est TDEq TDEq	$\Delta_f H(A) = 49\pm4$	87KEB/CHO 86CHO/KEB

Table 2. Negative Ion Table - Continued

Ion A.WAT) RA(A) AH (AII)	AC (ATT)	Mad at		77.70
Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$ $\Delta_f H(X \cdot Y^-)$ eV $\Delta H_{aff}(X \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>9</sub> H <sub>7</sub> O <sub>2</sub> <sup>-</sup> cubyl-CO <sub>2</sub> <sup>-</sup>		•	1)= 238±21 H)= 444±8	
* 136±33 <sup>a</sup> 3.40±0.21 <sup>d</sup> 1428±12 <sup>g</sup>	1398±8	IMRE	,	86TAF
C9H7O3 <sup>-</sup> pCOMe-benzoate <sup>-</sup>			i)= -464±4 H)= 444±13	
• -595±15 <sup>a</sup> 3.69±0.24 <sup>d</sup> 1399±11 <sup>g</sup>	1369±8	IMRE		86TAF
C <sub>9</sub> H <sub>8</sub> - indene				
146±3 b 0.17±0.03		Δ <sub>f</sub> H(A) =	= 163±1	80KUD/KUD 81WOJ/FOL
C <sub>9</sub> H <sub>8</sub> N <sup>-</sup> pMe-C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup>		Est $\Delta_f H(AH)$	l)= 153±8	
* 94±23 <sup>a</sup> 1471±15 <sup>g</sup>	1443±8	IMRE		86TAF
C <sub>9</sub> H <sub>8</sub> NO <sup>-</sup> pOMc-C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup>		Est Δ <sub>f</sub> H(AH,	)= 30±4	
* -29±19 a 1471±15 g	1443±8	IMRE		86TAF
C <sub>9</sub> H <sub>8</sub> O <sup>-</sup> PhCH = CHCHO <sup>-</sup> ·		5-4 A 11/A)	01.0	
-59±13 <sup>b</sup> 0.82±0.04		Est $\Delta_f H(A) =$ ECD	= 21±8	67WEN/CHE
C9H9 <sup>-</sup>		$\Delta_f$ H(AH)	)= 151±1	82FUCIHAL
1-phenylcyclopropanide 260±17 <sup>a</sup> 1639±16 <sup>g</sup>	1607±13	IMRB		84AND/DEP
C9H9 <sup>-</sup>		$\Delta_f$ H(AH)	)= 113±4	69BEN/CRU
CH <sub>2</sub> = C(Ph)CH <sub>2</sub> <sup>-</sup> 196±31 <sup>a</sup> 1613±27 <sup>g</sup>	1586±23	IMRB		84BAR/BUR
C <sub>9</sub> H <sub>9</sub> ClO <sub>2</sub> -				
CI-triMe-benzoquinone <sup></sup> • -423±21 <sup>b</sup> 1.86±0.05		Est2 $\Delta_f H(A) =$ IMRE	- −243±17	85FUK/MCI
С9Н9N-				
3,5-diMe-benzonitrile <sup></sup> * 39±21 <sup>b</sup> 1.14±0.09		Est2 $\Delta_f H(A) =$ TDEq	149±13	86СНО/КЕВ
С9Н9О-			= -109±2	77PED/RYL
MeCH = $C(Ph)O^{-}$ * $-131\pm23^{a}$ 1508 $\pm21^{g}$	1481±8	BDE(A-H)	l)= 389±8	79BAR/SCO
1509±21 <sup>g</sup>	1482±8 1483±8	IMRE IMRE <sup>0</sup>		78CUM/KEB 79BAR/SCO
McOH··PhC≡C <sup></sup> 70±26 <sup>c</sup> 56±10 <sup>g</sup>	32±8	IMRE		84CAL/ROZ

Table 2. Negative Ion Table - Continued

	Table	2. Negative ioi	n Table	- Continued	
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C9H9O- PhCH=C(Me)O-				$\Delta_f H(AH) = -98 \pm 2$	77PED/RYL
• -163±16 <sup>a</sup>	1465±15 g	1441±8	IMRE		79BAR/SCO
	1469±15 g	1445±8	IMRE		78CUM/KEB
		1451±8	IMRE		79BAR/SCO
СоноО-			Est	$\Delta_f H(AH) = -119 \pm 4$	
pCOMe-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup></sup> * -136±15 <sup>a</sup>	1513±11 g	1485±8	IMRE		86TAF
$C_9H_9O_2^-$ $mOMe-C_6H_4C(=CH_2)C$	<b>,</b> -		Est	$\Delta_f H(AH) = -244 \pm 4$	
• -264±15 a	1509±11 <sup>g</sup>	1481±8	IMRE		79BAR/SCO
		1490±8	IMRE		79BAR/SCO
C <sub>9</sub> H <sub>9</sub> O <sub>2</sub> -			Est	$\Delta_f H(AH) = -320 \pm 4$	
pCO <sub>2</sub> Me-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup></sup> -336±15 <sup>a</sup>	1515±11 <sup>g</sup>	1487±8	IMRE		86TAF
C9H9O2S <sup>-</sup> PhSO2-cyclopropanide <sup>-</sup>			Est	$\Delta_f H(AH) = -161 \pm 4$	
• -179±14 <sup>a</sup>	1512±10 <sup>g</sup>	1485±8	IMRE		78CUM/KEB
C9H9O3 <sup>-</sup> mCO <sub>2</sub> Et-phenoxide <sup>-</sup>			Est	$\Delta_f H(AH) = -502\pm 4$ $BDE(A-H) = 362\pm 8$	
• -593±14 <sup>a</sup> 2.44±0.19 <sup>d</sup>	1439±10 g	1410±8	IMRE		81FUJ/MCI
C <sub>9</sub> H <sub>10</sub> ClO					
PhCH <sub>2</sub> COMe··Cl <sup>-</sup>		45	TDEq		82FRE/IKU
C <sub>9</sub> H <sub>10</sub> ClO <sub>2</sub> -			Est2	$\Delta_f H(AH) = -410 \pm 13$	2 2 2 1 T
4-CI-bicyclo[2.2.2]octene- * -535±25 <sup>a</sup> 3.63±0.21 <sup>d</sup>		1376±8	IMRE	BDE(A-H)= 444±8	86TAF
C <sub>9</sub> H <sub>10</sub> O <sup>-</sup>					
propiophenone.				$\Delta_f H(A) = -109 \pm 2$	77PED RYL
-143±3 <sup>b</sup> 0.351±0.004	4		ECD		75WEN/KAO
C <sub>9</sub> H <sub>10</sub> O <sub>2</sub> -	<b>6</b>				
benzyl acetate.				$\Delta_f H(A) = -313 \pm 8$	
-328±18 <sup>b</sup> 0.1±0.1			ECD		83ZLA/LEE
C <sub>9</sub> H <sub>10</sub> O <sub>2</sub> -					
triMe-benzoquinone <sup>-</sup> .  * -374±13 b 1.60±0.05				$\Delta_f H(A) = -220 \pm 8$	
3/4±13 · 1.60±0.05			IMRE	······································	85FUK/MCI
C <sub>9</sub> H <sub>10</sub> O <sub>4</sub> -	_				
2,3-diMeO-5-Me-benzoq	uinone <sup>—.</sup>		mo =		
• 1.86±0.10			TDEq		87KEB/CHO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$	) ΔG <sub>acid</sub> (AH)	Method	l Comment	Reference
$\Delta_{f}H(X \cdot Y^{-})$ eV $\Delta H_{aff}(X \cdot Y^{-})$				
C <sub>9</sub> H <sub>11</sub> -			$\Delta_f H(AH) = 4 \pm 1$	77PED RYL
PhCMe <sub>2</sub> <sup></sup> * 59±11 <sup>a</sup> 0.79±0.18 <sup>d</sup> 1586±1	.0 g 1560±8	IMRE	BDE(A-H)= 350±7	81ROB/STE
39E11 0.79E0.16 1360E1	1554±8	IMRE		79BAR/SCO 79BAR/SCO
				//DAIQGCO
C <sub>9</sub> H <sub>11</sub> NO <sub>2</sub> <sup>-</sup> 2,4,6-triMe-nitrobenzene <sup>-</sup>		Est2	$\Delta_f H(A) = -17 \pm 13$	
* -84±22 b 0.70±0.10		TDEq		87KEB/CHO
0.67±0.11		IMRE		85GRI/CAL
0.72±0.05		IMRE		85FUK/MCI
C <sub>9</sub> H <sub>11</sub> O <sup>-</sup> miPr-phenoxide <sup>-</sup>			$\Delta_f H(AH) = -195 \pm 13$ $BDE(A-H) = 362 \pm 8$	77PED/RYL
• -264±22 a 2.21±0.19 d 1461±1	0 g 1432±8	IMRE		81FUJ/MCI
C <sub>9</sub> H <sub>11</sub> O <sup>-</sup> oiPr-phenoxide <sup>-</sup>		**	$\Delta_f H(AH) = -182 \pm 13$	77PED/RYL
• -258±25 <sup>a</sup> 1454±1	2 g 1423±8	IMRE		81FUJ/MCI
C <sub>9</sub> H <sub>11</sub> O <sup>-</sup>			$\Delta_f H(AH) = -209 \pm 13$	77PED/RYL
piPr-phenoxide <sup></sup> • -278±22 <sup>a</sup> 2.20±0.23 <sup>d</sup> 1461±10	0 g 1433±8	IMRE	BDE(A-H)= 362±13	81FUJ/MCI
C <sub>9</sub> H <sub>11</sub> O <sub>2</sub> -		Est2	$\Delta_f H(AH) = -363 \pm 13$	
bicyclo[2.2.2]octene-CO <sub>2</sub> <sup>-</sup> * -460±25 <sup>a</sup> 3.35±0.21 <sup>d</sup> 1433±13	2 g 1403±8	IMRE	BDE(A-H) = 444±8	86TAF
C <sub>9</sub> H <sub>11</sub> O <sub>2</sub> S <sup>-</sup>		Est	$\Delta_f H(AH) = -319\pm2$	
PhSO <sub>2</sub> CHEt <sup>-</sup> • -326±10 <sup>a</sup> 1523±8	g 1491±8	IMRE		78CUM/KEB
C <sub>9</sub> H <sub>12</sub> BrO <sub>2</sub>		Est2	$\Delta_f H(AH) = -480 \pm 13$	
4-Br-bicyclo[2.2.2]octane-CO <sub>2</sub> <sup>-</sup> * -598±25 a 3.56±0.21 d 1412±12	2 g 1382±8	IMRE	BDE(A-H) = 444±8	86TAF
CoH-oCI-				
C <sub>9</sub> H <sub>12</sub> Cl <sup>-</sup> 1,3,5-triMe-benzene··Cl <sup>-</sup>			•	
	19	TDEq		82FRE/IKU
C9H <sub>12</sub> Cl <sup>-</sup>				
PhiPr··Cl <sup>-</sup>	23	TDEq		82FRE/IKU
C <sub>9</sub> H <sub>12</sub> Cl <sup>-</sup> PhnPr··Cl <sup>-</sup>				
	21	TDEq		82FRE/IKU
C <sub>9</sub> H <sub>12</sub> ClO <sub>2</sub>		Est2	$\Delta_f H(AH) = -523 \pm 13$	
3-Cl-bicyclo[2.2.2]octane-CO <sub>2</sub> <sup>-</sup> • -629±25 a 3.44±0.21 d 1423±12	g 120/4±0	IMDE	$BDE(A-H) = 444 \pm 8$	0.6°T A 12
• -629±25 <sup>a</sup> 3.44±0.21 <sup>d</sup> 1423±12	28 1394±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

	Table	2. Negative io	ii Tabie	- Continued	
	\\ \text{H}_{acid}(AH) \\ \text{H}_{aff}(X \cdot Y^-)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C <sub>9</sub> H <sub>12</sub> ClO <sub>2</sub> <sup>-</sup> 4-Cl-bicyclo[2.2.2]octane-C	:O <sub>2</sub> -		Est2	$\Delta_f H(AH) = -530 \pm 13$ BDE(A-H) = 444 \pm 8	
* -645±25 <sup>a</sup> 3.53±0.21 <sup>d</sup>	1415±12 g	1385±8	IMRE	· · · · · · · · · · · · · · · · · · ·	86TAF
C <sub>9</sub> H <sub>12</sub> FO <sub>2</sub> <sup>-</sup> 4-F-bicyclo[2.2.2]octane-Co	D <sub>2</sub> -		Est2	$\Delta_f H(AH) = -677 \pm 13$ $BDE(A-H) = 444 \pm 8$	
• -790±25 a 3.51±0.21 d	1417±12 g	1387±8	IMRE	552(A 11)— 44410	86TAF
C <sub>9</sub> H <sub>12</sub> N <sup>-</sup> mNMe <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = 67\pm8$	
134±32 <sup>a</sup>	1597±23 g	1569±21	IMRB		83CAL/BAR
C <sub>9</sub> H <sub>12</sub> N <sup>-</sup> pNMe <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>			Est	$\Delta_f H(AH) = 71 \pm 8$	
155±32 <sup>a</sup>	1614±23 g	1586±21	IMRB		83CAL/BAR
C <sub>9</sub> H <sub>12</sub> NO <sub>4</sub> <sup>-</sup> 4-NO <sub>2</sub> -bicyclo[2.2.2]octane-	-CO-~		Est2	$\Delta_f H(AH) = -537 \pm 13$	
* -664±25 <sup>a</sup> 3.65±0.21 <sup>d</sup>	1403±12 g	1374±8	IMRE	BDE(A-H) = 444±8	86TAF
C <sub>9</sub> H <sub>13</sub> O <sub>2</sub> <sup>-</sup> bicyclo[2.2.2]octane-CO <sub>2</sub> <sup>-</sup>			Est2	$\Delta_f H(AH) = 8 \pm 13$ $BDE(A-H) = 444.8$	
* -82±23 a 3.27±0.20 d	1440±11 g	1411±8	IMRE	BDE(A-H) = 444±8	86TAF
C9H <sub>15</sub> O <sup>-</sup> cyclononanone enolate <sup>-</sup>			Est	$\Delta_f H(AH) = -279 \pm 8$	
• 1.69±0.06			PD		78ZIM/JAC
C <sub>9</sub> H <sub>19</sub> O <sup>-</sup> (tBu) <sub>2</sub> CHO <sup>-</sup>			Est	$\Delta_f H(AH) = -415\pm 4$	
* -412±16 a 2.25±0.17 d	1533±12 g	1505±8	IMRE	BDE(A-H)= 438±4	79BAR/SCO
		1509±8	IMRE		79BAR/SCO
C <sub>9</sub> H <sub>19</sub> O <sup>-</sup> nC <sub>9</sub> H <sub>19</sub> O <sup>-</sup>				$\Delta_f H(AH) = -376 \pm 2$ BDE(A-H) = 436 \pm 4	77PED/RYL
• -353±13 <sup>a</sup> 2.0±0.2 <sup>d</sup>	1553±11	1525±13 <sup>h</sup>	CIDC	202(17)- 40014	83BOA/HOU
	1551±10		CIDCO		83BOA/HOU
C <sub>9</sub> H <sub>21</sub> BF <sup>-</sup> iPr <sub>3</sub> B··F <sup>-</sup>					
-773 °	272		IMRB	$F^-A$ : $iPr_2BF > iPr_3B > Et_2BF > Et_3B$	77MUR/BEA2
C <sub>9</sub> H <sub>21</sub> O <sub>2</sub> <sup>-</sup> tBuOH··tBuCH <sub>2</sub> O <sup>-</sup>					
-687±27 °	85±10 g	57±8	IMRE		84CAL/ROZ
C <sub>10</sub> N <sub>6</sub> -			<b></b>	A 1//1	
hexacyanobutadiene. 3.3±0.1			<i>Est</i> SI	$\Delta_f H(A) = 586 \pm 42$	60D A C/COO
3.3±0.1			SI		69PAG/GOO 67FAR/PAG
					Onlymno

Table 2. Negative Ion Table - Continued

	$_{ m off}(X \cdot \cdot Y^-)$	
C <sub>10</sub> HN <sub>4</sub> <sup>-</sup>		
2,3,5,6-tetracyanophenide		
2.41±0.04	SI	67FAR/PAG
C <sub>10</sub> H <sub>2</sub> F <sub>12</sub> O <sub>6</sub> U <sup>-</sup>		
UO <sub>2</sub> .(hexafluoroAcAc) <sub>2</sub>		
1.9±0.3	NBIP	82YOK/QUI
C <sub>10</sub> H <sub>2</sub> N <sub>4</sub> <sup>-</sup>		
1,2,4,5-tetracyanobenzene	Est2 $\Delta_f H(A) = 627 \pm 13$	
2.2±0.2	SI	67FAR/PAG
C <sub>10</sub> H <sub>4</sub> Cl <sub>2</sub> O <sub>2</sub> -		
2,3-diCl-1,4-naphthoquinone-	Est2 $\Delta_f H(A) = -162\pm10$	
• -374±20 b 2.19±0.10	$TDE_{\mathbf{q}}$	87KEB/CHO
2.08±0.11	IMRE	85GRI/CAL
C <sub>10</sub> H <sub>5</sub> O <sub>2</sub> -	$\Delta_f H(AH) = -111 \pm 4$	77PED/RYL
1,4-naphthoquinonide	·	
1641±3 <sup>g</sup> <1	507 IMRB	87JOH/SPE
C <sub>10</sub> H <sub>6</sub> Cl <sub>4</sub> O <sub>4</sub> <sup>-</sup>		
dimethyl tetrachloroterephthalate.	Est2 $\Delta_f H(A) = 785 \pm 13$	
711 <sup>b</sup> 0.8	ECD	68KUH/LEV
C <sub>10</sub> H <sub>6</sub> N <sub>2</sub> O <sub>4</sub> -		
1,3-diNO <sub>2</sub> -naphthalene <sup>-</sup>	Est $\Delta_f H(A) = 120\pm 4$	
* -52±14 b 1.78±0.10	TDEq	87КЕВ/СНО
C <sub>10</sub> H <sub>6</sub> N <sub>2</sub> O <sub>4</sub> -		
1,5-diNO <sub>2</sub> -naphthalene	Est $\Delta_f H(A) = 120\pm 4$	
* -51±14 b 1.77±0.10	TDEq	87KEB/CHO
C <sub>10</sub> H <sub>6</sub> O <sub>2</sub> -		
1,4-naphthoquinone <sup>-</sup>	$\Delta_f H(A) = -111 \pm 4$	77PED/RYL
* -286±14 b 1.81±0.10	TDEq `	87KEB/CHO
1.71±0.11	IMRE	85GRI/CAL
1.71±0.05	IMRE	85FUK/MCI
> 0.8	ECD	83CHE/WEN
>0.6	ES	70COL/CHR
C <sub>10</sub> H <sub>7</sub> -	$\Delta_f H(AH) = 150 \pm 1$	82COUJIM
naphthalenide		
* 272±6 <sup>a</sup> 1651±5 16	1±5 TDEq	87MEO
C <sub>10</sub> H <sub>7</sub> Cl <sup>-</sup>		
1-Ci-naphthalene	$\Delta_f H(A) = 120 \pm 10$	77PED/RYL
93±10 <sup>b</sup> 0.277±0.003	ECD	69STE/WEN

Table 2. Negative Ion Table - Continued

•		Table 2. Negative Ion Table - Continued						
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference		
C <sub>10</sub> H <sub>7</sub> NO <sub>2</sub> <sup>-</sup> 1-NO <sub>2</sub> -naph 31±12 b				TDEq	$\Delta_f H(A) = 150 \pm 2$	77PED/RYL 87KEB/CHO		
C <sub>10</sub> H <sub>7</sub> NO <sub>2</sub> <sup>-</sup> 2-NO <sub>2</sub> -naph • 36±18 b	thalene <sup></sup> . 1.18±0.10			<i>Est2</i> TDEq	$\Delta_f H(A) = 150 \pm 8$	87КЕВ/СНО		
C <sub>10</sub> H <sub>7</sub> N <sub>2</sub> <sup>-</sup> pMe-C <sub>6</sub> H <sub>4</sub> -0	C(CN)2 <sup>-</sup>	1354±12 <sup>g</sup>	1323±8	IMRE		86TAF		
C <sub>10</sub> H <sub>7</sub> O <sup>-</sup> 2-naphthoxid	e <sup>-</sup>			-	$\Delta_f H(AH) = -30 \pm 1$	77PED/RYL		
• -122±11 <sup>a</sup>		1438±10 g	1408±8	IMRE		86TAF		
C <sub>10</sub> Hg <sup>-</sup> azulene * 223±13 b	0.69±0.10 0.75±0.11 0.68±0.04 0.52±0.01 > 0.5 0.656±0.008			TDEq IMRE Kine ECD ES ECD	Δ <sub>f</sub> H(A) = 289±3	77PED/RYL 87KEB/CHO 85GRI/CAL 85GRI/CHO2 81WOJ/FOL 70CHA/CHR 66BEC/CHE		
C <sub>10</sub> H <sub>8</sub> - naphthalene- 137±6 b	0.14±0.05 0.13±0.04 0.148±0.006			ECD ECD ECD	$\Delta_f H(A) = 150 \pm 1$	<i>82COUJIM</i> 83ZLA/LEE 81WOJ/FOL 66BEC/CHE		
C <sub>10</sub> H <sub>9</sub> BrCl <sub>2</sub> C 2,6-diCl-Br-t	O <sub>2</sub> - Bu-benzoquino 2.42±0.05	one"·		IMRE	Mark Control of the C	85FUK/MCI		
C <sub>10</sub> H <sub>9</sub> N <sub>2</sub> <sup>-</sup> 1,5-diaminona 127±22 a	aphthalenide -	1493±10 g	1463±8 1472±8	Est IMRE IMRE <sup>0</sup>	$\Delta_f H(AH) = 164 \pm 13$	82ARN/VEN 82ARN/VEN		
C <sub>10</sub> H <sub>9</sub> N <sub>2</sub> <sup>-</sup> 1,8-diaminona	aphthalenide		1441±8	Est2	Δ <sub>f</sub> H(AH)= 192±8	82ARN/VEN		
			1450±8	IMREO		82ARN/VEN		
C <sub>10</sub> H <sub>9</sub> O <sub>2</sub> - PhCOCH = C(	(Mc)O <sup>-</sup>	-			$\Delta_f H(AH) = -250\pm 2$			
• -358±12 a		1422±10 g	1393±8	IMRE		78CUM/KEB		

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$ $\Delta_f H(X \cdot Y^-)$ eV $\Delta H_{aff}(X \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y)$	Method	Comment	Reference
C <sub>10</sub> H <sub>10</sub> Cl <sub>2</sub> O <sub>2</sub> <sup>-</sup> 2,3-diCl-tBu-benzoquinone <sup>-</sup>				
* 2.25±0.05		IMRE		85FUK/MCI
C <sub>10</sub> H <sub>10</sub> F <sub>3</sub> O <sub>2</sub> <sup>-</sup> 4-CF <sub>3</sub> -bicyclo[2.2.2]octene-CO <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -1028 \pm 13$ BDE(A-H) = 444 \pm 8	
* -1153±25 <sup>a</sup> 3.63±0.21 <sup>d</sup> 1405±12 <sup>g</sup>	1376±8	IMRE		86TAF
C <sub>10</sub> H <sub>10</sub> NO <sub>2</sub> <sup>-</sup> 4-CN-bicyclo[2.2.2]octene-CO <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -231 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -367±25 <sup>a</sup> 3.75±0.21 <sup>d</sup> 1394±12 <sup>g</sup>	1365±8	IMRE	DDC(A-1)) = 44410	86TAF
C <sub>10</sub> H <sub>10</sub> O <sub>4</sub> <sup>-</sup> dimethyl isophthalate <sup></sup> -734 <sup>b</sup> 0.6		Est2	$\Delta_f H(A) = -681 \pm 8$	CONTRACTOR
-734 <sup>b</sup> 0.6		ECD		68KUH/LEV
C <sub>10</sub> H <sub>10</sub> O <sub>4</sub> <sup>-</sup> dimethyl phthalate <sup>-</sup> -707 b 0.6		Est ECD	$\Delta_f H(A) = -654 \pm 17$	68KUH/LEV
C <sub>10</sub> H <sub>10</sub> O <sub>4</sub> - dimethyl terephthalate743 b 0.6		Est2 ECD	$\Delta_f H(A) = -681 \pm 8$	68KUH/LEV
C <sub>10</sub> H <sub>11</sub> ClO <sub>2</sub> <sup>-</sup> 2-Cl-5-tBu-benzoquinone <sup>-</sup> · 2.06±0.05		IMRE		85FUK/MCI
C <sub>10</sub> H <sub>11</sub> N <sub>2</sub> -		Est	$\Delta_f H(AH) = 195 \pm 8$	
pNMe <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CHCN <sup>-</sup> * 143±23 <sup>a</sup> 1478±15 <sup>g</sup>	1450±8	IMRE		86TAF
C <sub>10</sub> H <sub>11</sub> O <sub>2</sub> <sup>-</sup> triMe-benzoquinone-CH <sub>2</sub> <sup>-</sup>		Est	$\Delta_f H(AH) = -252 \pm 8$	
0.80±0.09		SI		67FAR/PAG
C <sub>10</sub> H <sub>12</sub> F <sub>3</sub> O <sub>2</sub> <sup>-</sup> 4-CF <sub>3</sub> -bicyclo[2.2.2]octane-CO <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -1148 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -1264±25 a 3.55±0.21 d 1413±12 g	1384±8	IMRE		86TAF
C <sub>10</sub> H <sub>12</sub> NO <sup>-</sup> mCONMe <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -130 \pm 8$	
* -95±19 a 1564±11 g	1536±8	IMRE		86TAF
C <sub>10</sub> H <sub>12</sub> NO <sup>-</sup> pCONMe <sub>2</sub> -C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -130 \pm 8$	
• -131±19 a 1529±11 g	1501±8	IMRE		86TAF
C <sub>10</sub> H <sub>12</sub> NO <sub>2</sub> <sup>-</sup> 2-CN-bicyclo[2.2.2]octane-CO <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -354 \pm 13$ $BDE(A-H) = 444 \pm 8$	*
* -478±25 <sup>a</sup> 3.63±0.21 <sup>d</sup> 1405±12 <sup>g</sup>	1376±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$ $\Delta_f H(X \cdots Y^-)$ eV $\Delta H_{aff}(X \cdots Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
C <sub>10</sub> H <sub>12</sub> NO <sub>2</sub> -		Est2	$\Delta_f H(AH) = -354 \pm 13$	
3-CN-bicyclo[2.2.2]octane-CO <sub>2</sub> -470±25 <sup>a</sup> 3.55±0.21 <sup>d</sup> 1413±12 <sup>g</sup>	1384±8	IMRE	BDE(A-H)= 444±8	86TAF
C <sub>10</sub> H <sub>12</sub> NO <sub>2</sub> <sup>-</sup> 4-CN-bicyclo[2.2.2]octane-CO <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -350 \pm 13$ $BDE(A-H) = 444 \pm 8$	
• -476±25 a 3.64±0.21 d 1405±12 g	1375±8	IMRE		86TAF
C <sub>10</sub> H <sub>12</sub> O <sup>-</sup>				
2,4,6-triMe-benzaldehyde <sup>-</sup> -180±17 <sup>b</sup> 0.44±0.04		Est2 ECD	$\Delta_f H(A) = -138 \pm 13$	69WEN/RIS
C <sub>10</sub> H <sub>12</sub> O <sub>2</sub> <sup>-</sup> 2-iPr-5-Me-benzoquinone <sup>-</sup>		•		
• 1.79±0.10		TDEq		87KEB/CHO
C <sub>10</sub> H <sub>12</sub> O <sub>2</sub> -				
tetraMe-benzoquinone-  * -405±18 b 1.59±0.10		Est TORa	$\Delta_f H(A) = -252 \pm 8$	87KEB/CHO
1.52±0.05		TDEq IMRE		85FUK/MCI
C <sub>10</sub> H <sub>13</sub> O <sup>-</sup>		Est	$\Delta_f H(AH) = -202 \pm 8$	
mtBu-phenoxide	1430±8	IMRE	BDE(A-H) ≈ 362±8	81FUJ/MCI
C <sub>10</sub> H <sub>13</sub> O <sup>-</sup> otBu-phenoxide <sup>-</sup>		Est2	$\Delta_f H(AH) = -186 \pm 13$	
• -270±25 a 1447±12 g	1415±8	IMRE		81FUJ/MCI
C <sub>10</sub> H <sub>13</sub> O <sup>-</sup>		Est	$\Delta_{f} H(AH) = -202 \pm 8$	
ptBu-phenoxide - • -274±18 a 2.24±0.23 d 1458±10 g	1429±8	IMRE	$BDE(A-H) = 362\pm13$	81FUJ/MCI
	112720			
C <sub>10</sub> H <sub>13</sub> O <sub>2</sub> <sup>-</sup> 4-Me-bicyclo[2.2.2]octene-CO <sub>2</sub> <sup>-</sup>		Est2	$\Delta_f H(AH) = -395 \pm 13$ $BDE(A-H) = 444 \pm 8$	
• -497±25 a 3.39±0.21 d 1428±12 g	1399±8	IMRE	, ,	86TAF
C <sub>10</sub> H <sub>13</sub> O <sub>2</sub> S <sup>-</sup> PhSO <sub>2</sub> CHiPr <sup>-</sup>		Est	$\Delta_{f}H(AH) = -349\pm2$	
* -362±12 <sup>a</sup> 1517±10 <sup>g</sup>	1487±8	IMRE		78CUM/KEB
C <sub>10</sub> H <sub>14</sub>				
1,2,3,5-tetramethylbenzene-		ECD	$\Delta_f H(A) = -42 \pm 8$	<i>75GOO</i> 81WOJ/FOL
-52±10 b 0.11±0.01		ECD		81WOJ/FOL
C <sub>10</sub> H <sub>14</sub> -			$\Delta_f H(A) = -46 \pm 8$	75GOO
1,2,4,5-tetramethylbenzene -51±10 b 4.80±0.02		ECD	$\Delta f \Pi(N) = -4020$	81WOJ/FOL

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Table 2. Negative Ion Table - Continued

		2. Itegative io			
	acid(AH)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>10</sub> H <sub>15</sub> <sup>-</sup> pentaMe-cyclopentadienide <sup>-</sup>			Est2	$\Delta_f H(AH) = -33 \pm 17$	
* -54±29 <sup>a</sup>	1510±12 <sup>g</sup>	1485±8	IMRE		86TAF
C <sub>10</sub> H <sub>15</sub> O <sub>2</sub> <sup>-</sup> 4-Me-bicyclo[2.2.2]octane-CC	) <sub>2</sub>		Est2	$\Delta_f H(AH) = -515 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -609±25 <sup>a</sup> 3.31±0.21 <sup>d</sup>	1436±12 g	1407±8	IMRE		86TAF
C <sub>10</sub> H <sub>15</sub> O <sub>3</sub> <sup>-</sup> 3-OMe-bicyclo[2.2.2]octane-O	CO <sub>2</sub> -		Est2	$\Delta_f H(AH) = -628 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -720±25 <sup>a</sup> 3.30±0.21 <sup>d</sup>	1438±12 <sup>g</sup>	1408±8	IMRE		86TAF
C <sub>10</sub> H <sub>15</sub> O <sub>3</sub> <sup>-</sup> 4-OMe-bicyclo[2.2.2]octane-O	:Oo=		Est2	$\Delta_f H(AH) = -631 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -732±25 <sup>a</sup> 3.38±0.21 <sup>d</sup>	1430±12 <sup>g</sup>	1400±8	IMRE		86TAF
C <sub>10</sub> H <sub>17</sub> O <sup>-</sup> cyclodecanone enolate			Est	$\Delta_f H(AH) = -304 \pm 4$	
* 1.83±0.07			PD		78ZIM/JAC
C <sub>10</sub> H <sub>23</sub> O <sub>2</sub> -					
tBuCH <sub>2</sub> OH··tBuCH <sub>2</sub> O <sup>-</sup> -698±26 <sup>c</sup>	90±10 g	62±8	IMRE		84CAL/ROZ
C <sub>11</sub> H <sub>7</sub> N <sup>-</sup>					
1-naphthonitrile <sup>-</sup>			Est2	$\Delta_{f}H(A) = 286 \pm 13$	
• 221±22 <sup>b</sup> 0.68±0.10 0.68±0.09			TDEq TDEq		87KEB/CHO 86CHO/KEB
C <sub>11</sub> H <sub>7</sub> N <sup>-</sup>					
2-naphthonitrile			Est2	$\Delta_f H(A) = 286 \pm 13$	
* 223±22 <sup>b</sup> 0.65±0.10			TDEq		87KEB/CHO
0.65±0.09			TDEq		86CHO/KEB
C <sub>11</sub> H <sub>8</sub> O			<b>r</b>	A 1//A) 04 0	
1-naphthaldehyde <sup></sup> * -37±18 <sup>b</sup> 0.70±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = 31 \pm 8$	87KEB/CHO
0.68±0.02			ECD		75WEN/KAO
0.74±0.07			ECD		67WEN/CHE
C <sub>11</sub> H <sub>8</sub> O <sup>-</sup>					
2-naphthaldehyde-			Est	$\Delta_f H(A) = 31 \pm 8$	
* -32±18 <sup>b</sup> 0.65±0.10			TDEq		87KEB/CHO
0.62±0.02			ECD		75WEN/KAO 67WEN/CHE
0.62±0.04			ECD		0/WEN/CHE
C <sub>11</sub> H <sub>8</sub> O <sub>2</sub> -		•	_		
2-Me-1,4-naphthoquinone			Est	$\Delta_f H(A) = -127 \pm 8$	OSTITUTO (STA
* -295±18 b 1.74±0.10			TDEq		87KEB/CHO
1.66±0.05			IMRE		85FUK/MCI

Table 2. Negative Ion Table - Continued

	Table	2. Negative Io	n Table	- Continued	
	<sub>cid</sub> (AH) <sub>(</sub> (X··Y <sup>-</sup> )	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>11</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> 2-Me-1-NO <sub>2</sub> -naphthalene <sup>-</sup> · • 18±14 <sup>b</sup> 1.03±0.10			Est TDEq	$\Delta_{f}H(A)=117\pm4$	87KEB/CHO
C <sub>11</sub> H <sub>9</sub> NO <sub>3</sub> <sup>-</sup> 4-MeO-1-NO <sub>2</sub> -naphthalene <sup>-</sup> · •127±14 <sup>b</sup> 1.10±0.10			Est TDEq	$\Delta_f H(A) = -21 \pm 4$	87KEB/CHO
C <sub>11</sub> H <sub>9</sub> O <sub>4</sub> <sup>-</sup> 4-CO <sub>2</sub> Me-cubyl-CO <sub>2</sub> <sup>-</sup> • 3.55±0.21 <sup>d</sup>	1413±12 <sup>g</sup>	1384±8	IMRE	BDE(A-H)= 444±8	86TAF
C <sub>11</sub> H <sub>10</sub> <sup>-</sup> 1-Me-naphthalene <sup>-</sup> · 97±13 <sup>b</sup> 0.2±0.1			ECD	$\Delta_f H(A) = 113\pm 2$	<i>74SAB CHA</i> 81WOJ/FOL
C <sub>11</sub> H <sub>10</sub> <sup>-</sup> 2-Me-naphthalene <sup>-</sup> · 97±9 b 0.14±0.07			ECD	$\Delta_f H(A) = 111 \pm 2$	74SAB CHA 81WOJ/FOL
C <sub>11</sub> H <sub>13</sub> O <sup>-</sup> nPrOH··PhC≡C <sup>-</sup> 8±26 <sup>c</sup>	64±10 <sup>g</sup>	37±8	IMRE		84CAL/ROZ
C <sub>11</sub> H <sub>14</sub> ClO <sub>2</sub> <sup>-</sup> 3-Cl-1-adamantyl-CO <sub>2</sub> <sup>-</sup> • -692±23 <sup>a</sup>	1416±11 <sup>g</sup>	1387±8	Est2	$\Delta_f H(AH) = -577 \pm 13$ $BDE(A-H) = 444 \pm 8$	86TAF
C <sub>11</sub> H <sub>14</sub> O <sup>-</sup> 2,4,6-triMe-acetophenone <sup>-</sup> -252±8 b 0.49±0.04			ECD	$\Delta_f H(A) = -205 \pm 4$	77PED/RYL 69WEN/RIS
C <sub>11</sub> H <sub>15</sub> NO <sub>2</sub> <sup>-</sup> p-t-amyl-nitrobenzene <sup>-</sup> -306±29 b 2.2±0.2			Est2 CIDC	$\Delta_f H(A) = -97 \pm 13$	84BUR/FUK
C <sub>11</sub> H <sub>15</sub> O <sub>2</sub> <sup>-</sup> 1-adamantyl-CO <sub>2</sub> <sup>-</sup> • -624±23 <sup>a</sup>	1438±11 <sup>g</sup>	1408±8	Est2 IMRE	$\Delta_f H(AH) = -532 \pm 13$ $BDE(A-H) = 444 \pm 8$	86TAF
C <sub>11</sub> H <sub>16</sub> - pentamethylbenzene93±10 b 0.18±0.01			Est2 ECD	$\Delta_{f}H(A) = -75\pm8$	81WOJ/FOL
C <sub>11</sub> H <sub>25</sub> O <sub>2</sub> <sup>-</sup> tBuCH <sub>2</sub> OH··tBuCH(Me)O <sup>-</sup> -736±28 <sup>c</sup>	89±10 <sup>g</sup>	62±8	IMRE		84CAL/ROZ
C <sub>12</sub> F <sub>10</sub> <sup>-</sup> C <sub>6</sub> F <sub>5</sub> -C <sub>6</sub> F <sub>5</sub> <sup>-</sup> -873±22 b 0.91±0.10 0.91±0.10	7 to 18 to 1		Est2 TDEq IMRE	$\Delta_f H(A) = -785 \pm 13$	87KEB/CHO 86CHO/GRI

Table 2. Negative Ion Table - Continued

Ion $\Delta_{\mathbf{f}}H(\mathbf{A}^{-})$ $\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method		Comment	Reference
C <sub>12</sub> N <sub>6</sub> - hexacyanobenz	ene <sup>-</sup> . 2.5±0.1			<i>Est</i> SI	$\Delta_f H(A) =$	900±21	67FAR/PAG
C <sub>12</sub> H <sub>4</sub> N <sub>4</sub> <sup>-</sup> tetracyanoquin * 500±19 b		ne <sup></sup> .		NBIP NBIP SI SI	$\Delta_f H(A) =$	770±10	77PED/RYL 74KLO/COM 77COM/COO 79NAZ/POK 67FAR/PAG
C <sub>12</sub> H <sub>8</sub> <sup>-</sup> acenaphthylene 221±3 b	 0.40±0.03			ECD	$\Delta_f H(A) =$	260	<i>81KUD/KUD</i> 81WOJ/FOL
C <sub>12</sub> H <sub>8</sub> N <sup>-</sup> carbazolide <sup>-</sup> • 143±15 <sup>a</sup>		1444±11 <sup>g</sup>	1412±8	IMRE	Δ <sub>f</sub> H(AH)=	229±4	<i>81KUDIKUD2</i> 86TAF
C <sub>12</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> 2-Ph-benzoqu	inone <sup></sup> . 2.04±0.10			TDEq			87КЕВ/СНО
C <sub>12</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> mPh-nitrobenz * 58±18 b				Est2 TDEq	$\Delta_f H(A) =$	167±8	87KEB/CHO
C <sub>12</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> oPh-nitrobenze * 85±18 b				Est2 TDEq	$\Delta_f H(A) =$	188±8	87КЕВ/СНО
C <sub>12</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> pPh-nitrobenze * 52±18 b				Est2 TDEq	$\Delta_f H(A) =$	167±8	87КЕВ/СНО
C <sub>12</sub> H <sub>10</sub> <sup>-</sup> biphenyl <sup>-</sup> · 170±5 b	0.13±0.04			ECD	$\Delta_f H(A) =$	`182±1	77PED/RYL 81WOJ/FOL
C <sub>12</sub> H <sub>10</sub> N <sup>-</sup> Ph <sub>2</sub> N <sup>-</sup> 157±14 a		1468±11 g	1438±8	IMRE	$\Delta_f H(AH) =$	219±3	<i>78STE</i> 86TAF
C <sub>12</sub> H <sub>10</sub> O <sup>-</sup> 1-acetonaphtho -79±11 b				Est ECD	$\Delta_f H(A) =$	-21±8	75WEN/KAO
C <sub>12</sub> H <sub>12</sub> <sup>-</sup> 1,4-diMe-naph 59±16 b	thalene <sup>-</sup> . 0.25±0.08			ECD	$\Delta_f H(A) =$	83±8	69STU/WES 81WOJ/FOL

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdots Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>12</sub> H <sub>12</sub> <sup>-</sup> 1-Et-naphthal				Est ECD	$\Delta_f H(A) = 96 \pm 8$	81WOJ/FOL
C <sub>12</sub> H <sub>12</sub> <sup>-</sup> 2,3-diMe-naph 67±21 b				ECD	$\Delta_f H(A) = 84 \pm 8$	<i>69STU WES</i> 81WOJ/FOL
C <sub>12</sub> H <sub>12</sub> <sup>-</sup> 2,6-diMc-naph 68±11 b	nthalene 0.16±0.07			Est ECD	$\Delta_f H(A) = 84 \pm 4$	81WOJ/FOL
C <sub>12</sub> H <sub>12</sub> <sup>-</sup> 2-Et-naphthale 67±14 <sup>b</sup>	ene <sup></sup> 0.20±0.06			Est ECD	$\Delta_f H(A) = 86 \pm 8$	81WOJ/FOL
C <sub>12</sub> H <sub>14</sub> O <sub>4</sub> - diethyl phthalat	te <sup></sup> 0.5			ECD	$\Delta_f H(A) = -688 \pm 12$	. 77PED/RYL 68KUH/LEV
C <sub>12</sub> H <sub>15</sub> O <sub>4</sub> <sup>-</sup> 4-CO <sub>2</sub> Et-bicyc • -865±28 <sup>a</sup>			1389±8	Est2 IMRE	$\Delta_f H(AH) = -753 \pm 17$ $BDE(A-H) = 444 \pm 8$	86TAF
C <sub>12</sub> H <sub>18</sub> <sup>-</sup> hexamethylbenz -98±4 b	zene <sup></sup> 0.12±0.02			ECD	$\Delta_f H(A) = -87 \pm 3$	77PED/RYL 81WOJ/FOL
C <sub>12</sub> H <sub>21</sub> O <sup>-</sup> cyclododecanon	ne enolate 1.90±0.07	-		Est PD	$\Delta_f H(AH) = -350 \pm 8$	78ZIM/JAC
C <sub>12</sub> H <sub>27</sub> O <sub>2</sub> <sup>-</sup> tBuCH(Me)OH -768±31 <sup>c</sup>	I∵tBuCH	I(Me)O <sup>-</sup> 90±10 <sup>g</sup>	62±8	IMRE		84CAL/ROZ
C <sub>13</sub> F <sub>10</sub> O <sup>-</sup> (C <sub>6</sub> F <sub>5</sub> ) <sub>2</sub> CO <sup>-</sup> · • -2023±31 b	1.61±0.10 1.61±0.10			Est TDEq IMRE	$\Delta_f H(A) = -1868 \pm 21$	87KEB/CHO 85GRI/CAL
C <sub>13</sub> H <sub>8</sub> F <sub>2</sub> O <sup>-</sup> p,p'-diF-benzo -403±13 b				Est IMRE	$\Delta_f H(A) = -327 \pm 8$	85FUK/MCI
C <sub>13</sub> H <sub>9</sub> <sup>-</sup> fluorenide <sup>-</sup> • 129±12 <sup>a</sup>	1.86±0.24	d 1472±11 g 1478±11 g	1439±8 1446±8	IMRE IMRE	$\Delta_f H(AH) = 187 \pm 1$ $BDE(A-H) = 339 \pm 13$	81KUD/KUD 70TRO/BAZ 86TAF 78CUM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$ $\Delta G_{acid}$ $\Delta_f H(X \cdot Y^-)$ eV $\Delta H_{aff}(X \cdot Y^-)$ $\Delta G_{aff}(X \cdot Y^-)$		Reference
C <sub>13</sub> H <sub>9</sub> <sup>-</sup> perinaphthalenide <sup>-</sup>	Est2 $\Delta_f H(AH) = 226 \pm 13$	
* 1.1±0.1	PD	79GYG/PET
C <sub>13</sub> H <sub>9</sub> CIO <sup>-</sup>		
pCl-benzophenone <sup>-</sup> · • -53±13 <sup>b</sup> 0.85±0.05	Est Δ <sub>f</sub> H(A) = 29±8 IMRE	85FUK/MCI
С <sub>13</sub> Н <sub>9</sub> FO <sup>-</sup>		
pF-benzophenone,	Est $\Delta_f H(A) = -134\pm 8$	
• -196±18 <sup>b</sup> 0.64±0.10	TDEq	87KEB/CHO
0.74±0.05	IMRE	85FUK/MCI
C <sub>13</sub> H <sub>9</sub> O <sub>2</sub> -	Est $\Delta_f H(AH) = -131\pm 8$	
mCOPh-phenoxide <sup>-</sup> * -232±18 <sup>a</sup> 2.54±0.19 <sup>d</sup> 1428±10 <sup>g</sup> 1400±8	<i>BDE(A-H)= 362±8</i> 3 IMRE	01E(11/MC)
-232110 2.3410.19 1420110 1440110	) INICE	81FUJ/MCI
C <sub>13</sub> H <sub>9</sub> O <sub>2</sub> <sup>-</sup>	Est $\Delta_f H(AH) = -131 \pm 8$	
pCOPh-phenoxide <sup>-</sup> * -268±19 <sup>a</sup> 1393±11 <sup>g</sup> 1364±8	3 IMRE	81FUJ/MCI
C <sub>13</sub> H <sub>10</sub> <sup>-</sup>		
fluorene.	$\Delta_f H(A) = 188 \pm 1$	81KUD KUD
162±3 b 0.28±0.03	ECD	81WOJ/FOL
C <sub>13</sub> H <sub>10</sub> Cl <sup>-</sup>	Est $\Delta_f H(AH) = 110\pm 4$	
mCI-C <sub>6</sub> H <sub>4</sub> -CH(Ph)	• • •	
* 85±16 <sup>a</sup> 1505±12 <sup>g</sup> 1482±8	IMRE	86TAF
C <sub>13</sub> H <sub>10</sub> F	Est $\Delta_f H(AH) = -53\pm8$	
mF-C <sub>6</sub> H <sub>4</sub> CH(Ph)	·	
• -76±21 <sup>a</sup> 1507±12 <sup>g</sup> 1479±8	IMRE	86TAF
C <sub>13</sub> H <sub>10</sub> O <sup>-</sup>		
benzophenone".	$\Delta_f H(A) = 50 \pm 3$	78SAB/LAF3
* -10±13 b 0.62±0.10	TDEq ·	87KEB/CHO
0.61±0.11	IMRE	85GRI/CAL
0.69±0.05 0.64±0.05	IMRE ECD	85FUK/MCI 83CHE/WEN
C <sub>13</sub> H <sub>11</sub> -	$\Delta_f H(AH) = 140 \pm 3$	77PED/RYL
Ph <sub>2</sub> CH <sup>-</sup>	BDE(A-H)= 351±4	82MCM/GOL
* 131±13 <sup>a</sup> 1.47±0.14 <sup>d</sup> 1521±10 <sup>g</sup> 1499±8 1512±10 <sup>g</sup> 1489±8		79BAR/SCO 78CUM/KEB
0.8±0.3	SI	68GAI/PAG
1502±8	-	79BAR/SCO
C <sub>13</sub> H <sub>11</sub> FO <sup>-</sup>		
mF-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> OPh <sup>-</sup> ·	Est $\Delta_f H(A) = -166 \pm 4$	
0.28±0.09	ECD	84HER/WEN

Table 2. Negative Ion Table - Continued

	Table	2. Negative for	n rabie	Table 2. Negative ion Table - Continued							
	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference						
C <sub>13</sub> H <sub>11</sub> F <sub>12</sub> PUO <sub>10</sub> <sup>-</sup> UO <sub>2</sub> .(hexafluoroAcAc) <sub>2</sub> .O 1.5±0.3	P(OMe) <sub>3</sub>		NBIP		82YOK/QUI						
C <sub>13</sub> H <sub>11</sub> O <sub>2</sub> S <sup>-</sup>			Est2	$\Delta_f H(AH) = -160\pm13$							
pSO <sub>2</sub> Ph-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> * -187±23 <sup>a</sup>	1504±11 <sup>g</sup>	1473±8	IMRE		86TAF						
C <sub>13</sub> H <sub>12</sub> <sup>-</sup> Ph <sub>2</sub> CH <sub>2</sub> <sup>-</sup> · 125±7 b 0.16±0.04			ECD		81WOJ/FOL						
C <sub>13</sub> H <sub>12</sub> Cl <sup>-</sup> Ph <sub>2</sub> CH <sub>2</sub> ··Cl <sup>-</sup>		31	TDEq		82FRE/IKU						
CHO-					ozi rajiko						
C <sub>13</sub> H <sub>15</sub> O <sup>−</sup> tBuOH · · PhC=C <sup>−</sup> -57±28 <sup>c</sup>	72±10 g	44±8	IMRE		84CAL/ROZ						
C <sub>13</sub> H <sub>21</sub> O <sub>2</sub> <sup>-</sup> tBuCH(Me)OH··PhCH <sub>2</sub> O -523±27 <sup>c</sup>	90±10 g	63±8	IMRE		84CAL/ROZ						
C <sub>14</sub> H <sub>7</sub> ClO <sub>2</sub> <sup>-</sup> 1-Cl-9,10-anthraquinone <sup></sup> -290±22 b 1.71±0.10			Est2 TDEq	$\Delta_f H(A) = -125 \pm 13$	87KEB/CHO						
C <sub>14</sub> H <sub>7</sub> O <sub>2</sub> -				$\Delta_f H(AH) = -95 \pm 7$	77PED/RYL						
9,10-anthraquinonide		1607±17	IMRB		87JOH/SPE						
C <sub>14</sub> H <sub>8</sub> O <sub>2</sub> <sup>-</sup> 9,10-anthraquinone <sup>-</sup> -249±16 b 1.59±0.10 1.1±0.1			TDEq SI	$\Delta_f H(A) = -95 \pm 7$	77PED/RYL 87KEB/CHO 69PAG/GOO						
C <sub>14</sub> H <sub>9</sub> Cl <sup>-</sup> 1-Cl-anthracene <sup>-</sup> 126±14 b 0.78±0.10			Est TDEq	$\Delta_f H(A) = 201 \pm 4$	87КЕВ/СНО						
C <sub>14</sub> H <sub>9</sub> Cl <sup>-</sup> 2-Cl-anthracene <sup>-</sup> · • 128±14 b 0.75±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = 201 \pm 4$	87КЕВ/СНО						
C <sub>14</sub> H <sub>9</sub> Cl <sup>-</sup> 9-Cl-anthracene <sup>-</sup> * 118±14 b 0.86±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = 201 \pm 4$	87KEB/CHO						

Table 2. Negative Ion Table - Continued

	I <sub>acid</sub> (AH) <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>14</sub> H <sub>9</sub> NO <sub>2</sub> <sup>-</sup> 9-NO <sub>2</sub> -anthracene <sup>-</sup> • 75±14 b 1.43±0.10			Est TDEq	$\Delta_f H(A) = 213 \pm 4$	87KEB/CHO
C <sub>14</sub> H <sub>10</sub> <sup>-</sup> PhC=CPh <sup>-</sup> · 371±11 b 0.32±0.07			ECD	$\Delta_f H(A) = 402 \pm 4$	<i>82CHI LIE</i> 81WOJ/FOL
C <sub>14</sub> H <sub>10</sub> <sup>-</sup> anthracene <sup>-</sup> · • 172±11 b 0.60±0.10 0.48±0.04 0.57±0.02 0.556±0.008			TDEq ECD ECD ECD	$\Delta_{f}H(A)=230\pm1$	79KUD/KUD4 87KEB/CHO 81WOJ/FOL 68LYO/MOR 66BEC/CHE
C <sub>14</sub> H <sub>10</sub> <sup>-</sup> phenanthrene <sup>-</sup> · 181±4 b 0.27±0.04 0.307±0.007			ECD ECD	$\Delta_f H(A) = 207 \pm 1$	79KUD/KUD4 81WOJ/FOL 66BEC/CHE
C <sub>14</sub> H <sub>10</sub> F <sub>3</sub> <sup>-</sup> mCF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> -CH(Ph) <sup>-</sup> * -574±14 a	1484±10 g	1462±8	Est IMRE	$\Delta_f H(AH) = -528\pm4$	86TAF
C <sub>14</sub> H <sub>10</sub> F <sub>12</sub> O <sub>7</sub> U <sup>-</sup> UO <sub>2</sub> .(hexafluoroAcAc) <sub>2</sub> .THF 1.6±0.2	_		NBIP		82YOK/QUI
C <sub>14</sub> H <sub>10</sub> N <sup>-</sup> mCN-C <sub>6</sub> H <sub>4</sub> -CH(Ph) <sup>-</sup> * 216±14 a	1470±10 g	1448±8	Est IMRE	$\Delta_f H(AH) = 276\pm4$	86TAF
C <sub>14</sub> H <sub>11</sub> 2-Mc-fluorenide  • 100±21 a	1475±12 g	1443±8	Est2	$\Delta_f H(AH) = 155\pm 8$	86TAF
C <sub>14</sub> H <sub>11</sub> <sup>-</sup> 9-Me-fluorenide <sup>-</sup> • 47±23 <sup>a</sup>	1468±11 <sup>g</sup>	1437±8	Est2	Δ <sub>f</sub> H(AH)=` 109±13	86TAF
C <sub>14</sub> H <sub>11</sub> O <sup>-</sup> pCOPh-C <sub>6</sub> H <sub>4</sub> CH <sub>2</sub> <sup>-</sup> * 3±15 a	1507±11 <sup>g</sup>	1479±8	Est IMRE	$\Delta_f$ H(AH)= 26±4	86TAF
C <sub>14</sub> H <sub>11</sub> O <sub>2</sub> S <sup>-</sup> 9-SO <sub>2</sub> Me-fluorenide <sup>-</sup> • -287±23 <sup>a</sup>	1384±11 <sup>g</sup>	1351±8		$\Delta_f$ H(AH)= $-141\pm13$	86TAF
C <sub>14</sub> H <sub>12</sub> <sup>-</sup> (E)-PhCH = CHPh <sup>-</sup> · 197±9 b 0.39±0.06			ECD	$\Delta_f H(A) = 235 \pm 3$	77PED/RYL 81WOJ/FOL

Table 2. Negative Ion Table - Continued

	Table 2. Negative for Table - Continued						
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference	
C <sub>14</sub> H <sub>12</sub> <sup>-</sup> Ph <sub>2</sub> C = CH <sub>2</sub> <sup>-</sup> 208±10 b	0.39±0.06			ECD		81WOJ/FOL	
C <sub>14</sub> H <sub>15</sub> O <sub>2</sub> <sup>-</sup> PhCH <sub>2</sub> OH···I	PhCH <sub>2</sub> O	93±4	66±7	TDAs		84CAL/ROZ	
C <sub>14</sub> H <sub>20</sub> O <sub>2</sub> <sup>-</sup> 2,6-di-tBu-be • -516±22 b				<i>Est2</i> TDEq	$\Delta_f H(A) = -335 \pm 13$	87КЕВ/СНО	
C <sub>15</sub> H <sub>9</sub> N <sup>-</sup> 9-CN-anthrac • 244±14 b	ene 1.27±0.10			Est TDEq	$\Delta_f H(A) = 366 \pm 4$	87КЕВ/СНО	
C <sub>15</sub> H <sub>10</sub> O <sup>-</sup> 9-anthraldehye • -16±18 b	de <sup></sup> . 1.31±0.10 1.0±0.1			Est2 TDEq ECD	$\Delta_f H(A) = 110 \pm 8$	87KEB/CHO 67WEN/CHE	
C <sub>15</sub> H <sub>10</sub> O <sup>-</sup> 9-phenanthral 0±9 b	dehyde <sup></sup> 0.724±0.009 0.7±0.1	)		Est2 ECD ECD	$\Delta_f H(A) = 70 \pm 8$	75WEN/KAO 67WEN/CHE	
C <sub>15</sub> H <sub>13</sub> - 9-Et-fluorenia • 27±23 a	de <sup>-</sup>	1469±11 <sup>g</sup>	1437±8	Est2	$\Delta_f H(AH) = 88 \pm 13$	86TAF	
C <sub>15</sub> H <sub>13</sub> O <sup>-</sup> PhCH <sub>2</sub> OH···I 145±26 °	PhC=C	82±10 <sup>g</sup>	54±8	IMRE		84CAL/ROZ	
C <sub>16</sub> H <sub>10</sub> - fluoranthene- 228 b	0.6			ECD	$\Delta_f H(A) = 289 \pm 1$	<i>81KUD</i> / <i>KUD</i> 69MIC	
C <sub>16</sub> H <sub>10</sub> - pyrene-  168±4 b	0.50±0.03 0.591±0.008	3		ECD ECD	$\Delta_f H(A) = 216 \pm 1$	<i>79KUD KUD2</i> 68LYO/MOR 66BEC/CHE	
C <sub>16</sub> H <sub>12</sub> O <sup>-</sup> 9-COMe-anth * -34±14 b		731 4		<i>Est</i> TDEq	$\Delta_f H(A) = 60 \pm 4$	87КЕВ/СНО	
C <sub>16</sub> H <sub>12</sub> O <sub>2</sub> <sup>-</sup> 2-Et-9,10-ant -299±14 b	hraquinone <sup>-</sup> 1.56±0.10	-,		Est TDEq	$\Delta_f H(A) = -149 \pm 4$	87КЕВ/СНО	

Table 2. Negative Ion Table - Continued

	H <sub>acid</sub> (AH) I <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^-)$	Method Comment	Reference
C <sub>16</sub> H <sub>15</sub>			Est2 $\Delta_f H(AH) = 59 \pm 13$	
9-iPr-fluorenide <sup></sup> * -2±23 <sup>a</sup>	1470±11 <sup>g</sup>	1437±8	IMRE	86TAF
C <sub>17</sub> H <sub>12</sub> Cl <sup>-</sup> 2-Ph-5-pCl-C <sub>6</sub> H <sub>4</sub> -cyclopen	tadienide		Est2 $\Delta_f H(AH) = 293\pm13$	
* 170±23 <sup>a</sup>	1407±11 g	1376±8	IMRE	86TAF
C <sub>17</sub> H <sub>13</sub> <sup>-</sup> 1,4-diphenylcyclopentadienid	e =		Est $\Delta_f H(AH) = 322\pm 8$	
* 205±18 <sup>a</sup>	1413±10 g	1383±8	IMRE	86TAF
C <sub>17</sub> H <sub>17</sub> <sup>-</sup> 9-iBu-fluorenide <sup>-</sup>			Est2 $\Delta_f H(AH) = 42\pm13$	
* -21±23 <sup>a</sup>	1468±11 <sup>g</sup>	1435±8	IMRE	86TAF
C <sub>17</sub> H <sub>17</sub> <sup>-</sup> 9-tBu-fluorenide <sup>-</sup>			Est2 $\Delta_f H(AH) = 25\pm17$	
• -36±28 a	1469±11 <sup>g</sup>	1438±8	IMRE	86TAF
C <sub>18</sub> H <sub>12</sub> <sup>-</sup> benz[a]anthracene <sup>-</sup> . 224±2 b 0.630±0.008			$\Delta_f H(A) = 285 \pm 1$ ECD	79KUD/KUD2 66BEC/CHE
C <sub>18</sub> H <sub>12</sub> <sup>-</sup> benzo[c]phenanthrene <sup>-</sup> 240±2 <sup>b</sup> 0.545±0.008			$\Delta_f H(A) = 293 \pm 1$ ECD	79KUD/KUD2 66BEC/CHE
C <sub>18</sub> H <sub>12</sub> <sup>-</sup> chrysene <sup>-</sup> 246±2 b 0.397±0.008			$\Delta_f H(A) = 284 \pm 1$ ECD	79KUD/KUD2 66BEC/CHE
C <sub>18</sub> H <sub>12</sub> <sup>-</sup> naphthacene <sup>-</sup> · 199±5 b 0.88±0.04			$\Delta_f H(A) = 284 \pm 1$ ECD	79KUD KUD2 68LYO/MOR
C <sub>18</sub> H <sub>12</sub> <sup>-</sup> triphenylene <sup>-</sup> . 242±2 b 0.285±0.008			$\Delta_f H(A) = 270 \pm 1$ ECD	79KUD KUD2 66BEC/CHE
C <sub>18</sub> H <sub>15</sub> <sup>-</sup> 2-Ph-5-p-tolyl-cyclopentadien	uta.=		Est $\Delta_f H(AH) = 288 \pm 8$	
* 171±19 <sup>a</sup>	1413±11 <sup>g</sup>	1381±8	IMRE	86TAF
C <sub>18</sub> H <sub>16</sub> O <sub>2</sub> <sup>-</sup> 2-tBu-9,10-anthraquinone <sup>-</sup> * -353±14 b 1.56±0.10			Est $\Delta_f H(A) = -202\pm 4$ TDEq	87KEB/CHO
C <sub>18</sub> H <sub>19</sub> -			Est $\Delta_f H(AH) = 4 \pm 17$	
9-tBuCH <sub>2</sub> -fluorenide <sup></sup> * -74±28 <sup>a</sup>	1452±11 <sup>g</sup>	1419±8	IMRE	86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C <sub>19</sub> H <sub>11</sub> - fluoradenide-						
•		1391±10 g	1359±8	IMRE		86TAF
C <sub>19</sub> H <sub>13</sub> <sup>-</sup> 9-Ph-fluorenid	e <sup>-</sup>			Est2	$\Delta_f H(AH) = 318 \pm 13$	
• 224±23 a		1436±11 <sup>g</sup>	1404±8	IMRE		86TAF
C <sub>19</sub> H <sub>15</sub> - Ph <sub>3</sub> C					$\Delta_f H(AH) = 271 \pm 4$	77PED/RYL
242±16 <sup>a</sup>		1501±12 g	1467±8	IMRE		86TAF
		1510±13 g	1476±10	IMRE		84BAR
	2.56			IMRE	Solution equilibrium + solvation cycle	30BEN
	0.8		****	SI .	From hexaphenylethane	68GAI/PAG
C <sub>19</sub> H <sub>16</sub> Cl <sup>-</sup> Ph <sub>3</sub> CH··Cl <sup>-</sup>						
			17	TDEq		82FRE/IKU
C <sub>20</sub> H <sub>12</sub>	<u> </u>					
benz[a]pyrene	•				$\Delta_f H(A) = 289 \pm 4$	77STE GOL
	0.680±0.0	08		ECD		66BEC/CHE
C <sub>20</sub> H <sub>12</sub>						
benz[e]pyrene				Est	$\Delta_f H(A) = 261 \pm 4$	
	0.534±0.0	08		ECD	•	66BEC/CHE
C <sub>21</sub> H <sub>15</sub>				Est	$\Delta_f H(AH) = 371 \pm 8$	
1,3-diphenylind	enide <sup>-</sup>				27.17.19. Or 120	
* 244±18 <sup>a</sup>	-	1403±10 g	1376±8	IMRE		86TAF
CooHe -						
C <sub>22</sub> H <sub>14</sub> <sup>-</sup> dibenz[a,h]anth	racene -				$\Delta_f H(A) = 336 \pm 4$	77STEIGOL
	0.595±0.0	08		ECD		66BEC/CHE
C <sub>22</sub> H <sub>14</sub> <sup>-</sup>				Est	$\Delta_f H(A) = 336 \pm 4$	
dibenz[a,j]anthr 279±5 b	acene 0.591±0.0	08		ECD	411(r) = 00024	66BEC/CHE
4./10						
C <sub>22</sub> H <sub>14</sub> -				_		
picene.				Est	$\Delta_f H(A) = 326 \pm 8$	(IDDA(OTT
274±9 b	0.542±0.0	08		ECD		66BEC/CHE
C <sub>27</sub> H <sub>19</sub> -						
1,2,3-triPh-inde	enide <sup>—</sup>					
•		1404±11 g	1373±8	IMRE		86TAF
CaH-						
CaH <sup>-</sup>					$\Delta_f H(A) = 229 \pm 42$	82TN270
	0.93±0.05			PD	• • •	77RAC/FEL

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$H_{acid}(AH)$ $I_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CeF <sub>4</sub> <sup>-</sup> CeF <sub>3</sub> ··F <sup>-</sup> -2005±29	3.60±0.30 <sup>i</sup>	459±29 <sup>k</sup>		TDEq		81SID/SOR
CeI <sup>-</sup>	>0.3±0.3			EIAP	From CeI <sub>3</sub>	76СНА
CeI <sub>2</sub> -						
CeI <sub>2</sub>					$\Delta_f H(A) = -192$	76CHA
<-221 b	> 0.3±0.2	<del></del>		EIAP	From CeI <sub>3</sub>	76CHA
CeI <sub>3</sub> -						
CeI <sub>3</sub> <sup>,</sup> <-368 <sup>b</sup>	>0.3			IMRR	$\Delta_f H(A) = -339$ $CcI_2^- + CeI_3 \rightarrow$	76СНА 76СНА
CeI <sub>4</sub> -						
-808 c		280±33	245±42	TDEq		76CHA
CI <sup>-</sup>					<del></del>	
CI <sup>-</sup>					$\Delta_f H(A) = 122$	85JANAF
* -227±1 <sup>a</sup>	3.617±0.003	1395±1 e	1372±1 h	LOG	•	85HOT/LIN
	· <del>···································</del>	1396±9 g	1374±8	IMRE		81FUJ/MCI
ClCrO-						
CrOCl	12.01			T2T A 12	$\Delta_f H(A) = -116 \pm 48$ From C-O. Cl	69FLEIWHI
-231±48	1.2±0.1			EIAP	From CrO <sub>2</sub> Cl <sub>2</sub>	69FLE/WHI
ClCrO <sub>2</sub> -						
CrO <sub>2</sub> Cl <sup></sup> -531±48	2.4±0.4			EIAP	$\Delta_f H(A) = -309 \pm 48$ From CrO <sub>2</sub> Cl <sub>2</sub>	<i>69FLEIWHI</i> 69FLE/WHI
-331140	2.410.4	<del></del>			110111 0102012	
CIF-					4	
CIF <sup>-</sup> · -195±29 b	1 5+0 3			NBIP	$\Delta_f H(A) = -50$ From CF <sub>2</sub> Cl <sub>2</sub>	<i>85JANAF</i> 78DIS/LAC
-175127	> 1.5±0.2			EIAP	From CFCl <sub>3</sub>	79ILL/SCH
	2.9±0.2			EIAP	From CIF <sub>3</sub>	79DUD/GOR
	>1.5±0.4			EIAP	From SF <sub>5</sub> Cl	72THY
CIFH-				*************		
HF··Cl <sup>™</sup>						
• -591±10 <sup>c</sup>		91±8 g	63±8	IMRE		84LAR/MCM2
CIFO-						
CIOF-				Est2	$\Delta_f H(A) = 54 \pm 21$	
	> 2.0±0.2			EIAP		80BAL/NIK2
CIFO <sub>2</sub> -						
CIO <sub>2</sub> F					$\Delta_f H(A) = -33$	73BAR
-255 b	> 2.3			EIAP	From CIO <sub>3</sub> F	83ALE/FED

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
ClF <sub>2</sub>	·					
CIF <sub>2</sub>						
2.5 2	> 3.2±0.2			EIAP	From CIF <sub>5</sub>	80BAL/NIK
	>0.9±0.2			EIAP	From CIF <sub>3</sub>	79DUD/GOR
CIF <sub>2</sub> OS						
F2SO · · CI						
• -851±30 <sup>c</sup>		72±8 <sup>g</sup>	43±8	IMRE		85LAR/MCM
CIF <sub>3</sub> -	·					
CIF3					$\Delta_f H(A) = -163 \pm 2$	82BAU COX
	> 2.4±0.1			EIAP	From CIF <sub>5</sub>	80BAL/NIK
CIF3OP-				•		
PF <sub>3</sub> O··Cl <sup>™</sup>						
• -1497±12 <sup>c</sup>		58±8 g	32±8	IMRE		85LAR/MCM
CIF <sub>3</sub> P-						
PF <sub>3</sub> ··Cl¯						
• -1211±12 °		65±8 <sup>g</sup>	38±8	IMRE		85LAR/MCM
CIF <sub>4</sub> Si <sup>-</sup>						
SiF <sub>4</sub> ··Cl						
• -1940±12 <sup>c</sup>		98±8 g	70±8	IMRE		85LAR/MCM
CIHI-						
HC1··I <sup>™</sup>						
* -343±9 <sup>c</sup>		62±8	37±11	TDAs		85CAL/KEB
ClH <sub>2</sub> O-						
нон⊷сі⁻						
* -532 °		62±1	38±6	TDAs		80KEE/CAS2
		62±8	38±11	TDAs		86YAM/FUR
		60±8 <sup>g</sup>	35±8	IMRE		84LAR/MCM2
		62	37	TDAs		82BUR/HAY
		55±8	30±8	TDAs		71YAM/KEB
CIH <sub>2</sub> O <sub>2</sub> -						
HOOH · · CI		00.1		(III) 23	Datas and Alexander of the Company o	040033474
-456±6 <sup>c</sup>		92±4	65±4	TDEq	Relative to HOH··Cl <sup>-</sup> , 80KEE/LEE	84BOH/FAH
CIH <sub>2</sub> O <sub>4</sub> S						
HCI··HSO <sub>4</sub> <sup>-</sup>		20.4	47.4	TTOE-	Deletin to HOU. HOO " GADOURALL	0ADOU/PAT
		66±4	47±4	TDEq	Relative to HOH··HSO <sub>4</sub> , 84BOH/FAH	84BOH/FAH
CIH <sub>3</sub> N-						
NH <sub>3</sub> ··Cl		40	40.0			041 475 5467 55
* -317±18 <sup>c</sup>		44±17g	19±8	IMRE		84LAR/MCM2

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CII-						
ICI					$\Delta_f H(A) = 18$	85JANAF
−215±10 <sup>b</sup>				NBIP		73AUE/HUB
-155	1.8 <sup>i</sup>			Endo	I + NOCI →	77REF/FRA
	1.48±0.05			NBIP	Vertical EA	76HUB/KLE
CIK-						
KCI"					$\Delta_f H(A) = -215$	85JANAF
-276 <sup>b</sup>	0.6			Scat		79DEV/WIJ
	>1.3			EIAP	From (KCl) <sub>2</sub>	64EBI
CILi-						
LiCl <sup>-</sup> ·					$\Delta_f H(A) = -196 \pm 8$	85JANAF
-255±10 b	0.610±0.0	20		LPES	•	76CAR/PET
	>1.3			EIAP	From (LiC!) <sub>2</sub>	64EBI
CINa <sup>-</sup>						
NaCl <sup>-</sup> ·					$\Delta_f H(A) = -181 \pm 8$	85JANAF
-255 <sup>b</sup>	0.8			Scat	,	79DEV/WIJ
	>1.3			EIAP	From (NaCl) <sub>2</sub>	64EBI
					$\Delta_f H(AH) = -79\pm8$	82BAU/COX
C10 <sup>-</sup>					BDE(A-H)= 399±9	82TN270
* -108±18 <sup>a</sup>	2.170	1502±9 <sup>e</sup>	1474±10 h	LPD	, ,	79LEE/SMI
	2.4±0.2			EIAP	From Cl <sub>2</sub> O	80BAL/NIK2
	1.9±0.3			IMRB	2	78DOT/ALB
<-54±21	> 1.6±0.2 i			Endo	Cl <sup>-</sup> + O <sub>2</sub> →	77VOG/DRE
CIOV-						
VOCIT						
<b>-310±48</b>	1.4±0.4			EIAP	From VOCI <sub>3</sub>	75FLE/SVE
CIO <sub>2</sub> -						
ocio-					$\Delta_f H(A) = 97 \pm 8$	82BAU/COX
~29±50 <sup>b</sup>	1.3±0.4			ECD	•	81WEC/CHR
	1.8±0.2			EIAP	From FClO <sub>3</sub>	80BAL/NIK2
ClO <sub>2</sub> S <sup>-</sup>				<u></u>		
so <sub>2</sub> ··cı⁻						
• -617±11 c		93±8	66±8	TDAs		85CAL/KEB
		93±8	63±7		Relative to HOH · · Cl in 80KEE/LEE	84ВОН/ГАН
		91±1	62±1	TDAs	· · · · · · · · · · · · · · · · · · ·	80KEE/LEE
		87±8 g	62±8	IMRE		85LAR/MCM
				IMRB		79ROB/FRA
<565						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
<-565 -326				IMRB		78SUL/BEA2
-326	·			IMRB		78SUL/BEA2
			· · · · · · · · · · · · · · · · · · ·	IMRB	$\Delta_f H(A) = 126 \pm 21$	78SUL/BEA2 82TN270

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
ClO <sub>3</sub> S <sup>-</sup> so <sub>3</sub> ··cl <sup>-</sup>				***	December 11 (Assessment December 1 Assessment 1 Assessmen	06 A D A (CM)
		<1312±8		EIAP	From CISO <sub>3</sub> H (Appearance Potential = 0 eV)	86ADA/SMI
ClO <sub>4</sub> S <sub>2</sub> -						
so <sub>2</sub> ··so <sub>2</sub> ci⁻						00777777046
-982				IMRE		80KEE/CAS
<-920				IMRB		79ROB/FRA
ClPb-						
PbCl <sup>-</sup>						
	1.0±0.2			EIAP	From PbCl <sub>2</sub>	67HAS/BLO
CIRb-						
RbCl-				•	$\Delta_f H(A) = -229$	82TN270
	>1.5			EIAP	From (RbCl) <sub>2</sub>	64EBI
ClXe <sup>-</sup>						
Xe··Cl						0.467.489
		13		Mobi		84GAT
		13		Mobi		80THA/EIS 79DEV/WIJ2
		< 13		Mobl		/3DEV/WIJZ
Cl <sub>2</sub> -						
Cl <sub>2</sub> <sup>-,</sup>				NIDID		77DIS/LAC2
• -232±19 b				NBIP ECD	Vertical EA: 1.02 eV	81AYA/WEN
	2.3 2.3±0.1			EnCT	Voltical Lat. 1.02 o V	73HUG/LIF
	2.5±0.1			IMRB		72DUN/FEH
	2.5±0.1			NBIP		72BAE
	2.5±0.2			EIAP	From CCl <sub>4</sub>	71DEC/FRA
	1.02±0.05			NBIP	Vertical EA	76HUB/KLE
	2.4±0.1			EnCT		71CHU/BER
	3.2±0.2			NBIP		70LAC/HER
Cl <sub>2</sub> CrO		·····				
CrOCl <sub>2</sub>					$\Delta_f H(A) = -309 \pm 48$	69FLEJWHI
-550±48	2.5±0.1			EIAP	•	69FLE/WHI
Cl <sub>2</sub> Ge <sup>-</sup>						
GeCl <sub>2</sub>					$\Delta_f H(A) = -172 \pm 4$	79TPIS
-418 b	2.6			EIAP	·	77PAB/MAR
	· · · · · · · · · · · · · · · · · · ·					
Cl <sub>2</sub> H <sup>-</sup> HCl··Cl <sup>-</sup>						
• -419±10 °		100±8	72±11	TDAs		85CAL/KEB
		97±8 g	67±8	IMRE		84LAR/MCM2
		99±1	70±1	TDAs		74YAM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y)$	Method	Comment	Reference
Cl <sub>2</sub> I <sup>-</sup>						
ICI2						
-605_		377 <sup>k</sup>		Latt		77FIN/GAT
Cl <sub>2</sub> O-						
Cl <sub>2</sub> O <sup>-</sup> ·					$\Delta_f H(A) = 105 \pm 2$	82TN270
<-109 b	> 2.2			ECD		81WEC/CHR
Cl <sub>2</sub> OP-						
Cl <sub>2</sub> PO	28.02			NIDAD	Provide DOC	#CM A TUTO OTT
	3.8±0.3			NBAP	From POCl <sub>3</sub>	76MAT/ROT
Cl <sub>2</sub> OV						
VOCI <sub>2</sub> - -590±48	3.2±0.5			DIAD	Prom VOCI	7501 0/01/0
-370148	J.210.J			EIAP	From VOCl <sub>3</sub>	75FLE/SVE
Cl <sub>2</sub> O <sub>2</sub> S <sup>-</sup>						
SO <sub>2</sub> Cl <sub>2</sub>					$\Delta_f H(A) = -364 \pm 2$	82TN270
<-598 b	> 2.4			IMRB	EA: > Cl <sub>2</sub>	79ROB/FRA
Cl <sub>2</sub> P-						
PCI <sub>2</sub>						
<-891±19	0.9±0.1			EIAP EIAP	From PCCI	78PAB/MAR 74HAL/KLE
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				EIAF	From POCl <sub>3</sub>	HALIALE
Cl <sub>2</sub> Si <sup>-</sup>					4 4441	00711070
SiCl <sub>2</sub> <sup></sup>	0.8±0.1			EIAP	$\Delta_f H(A) = -166$ From SiCl <sub>4</sub>	<i>82TN270</i> 77PAB/MAR
-228±21	> 2.5			EIAP	From SiCl <sub>4</sub>	68JAE/HEN
	<del> </del>				7	
Cl <sub>2</sub> Sn <sup>-</sup>					A 1//A) 202.4	CATRIC
SnCl <sub>2</sub> <sup></sup> . -95	1.0			EIAP	$\Delta_f H(A) = -203 \pm 4$ From SnCl <sub>4</sub>	<i>82TPIS</i> 77PAB/PER
					1.0	
Cl <sub>2</sub> V-						
VCI <sub>2</sub> <sup>-</sup> -1189±28 <sup>b</sup>	12.02			TTAD	$\Delta_f H(A) = -1073 \pm 8$	<i>82TN270</i> 75FLE/SVE
-1109±20	1.2±U.2			EIAF	From VOCl <sub>3</sub>	/SPLE/SVE
Cl <sub>3</sub> -						
Cl <sub>3</sub> <sup>-</sup> -300		70 <sup>k</sup>		IMRE		79ROB/FRA2
	>4.3±0.2			IMRB		79ROB/FRA2 79ROB/FRA
>-410 °	1102012	< 182		PDis		79LEE/SMI
Cl <sub>3</sub> Ge <sup>-</sup>				<u></u>		
GeCl3						
	> 2.6				From GeCl <sub>4</sub>	79MAT/ROT
	1.8±0.1 1.8			EIAP EIAP	From GeCl <sub>4</sub> From GeCl <sub>4</sub>	78PAB/MAR 77PAB/MAR
	1.0			PIMI	riom occią	minima

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
Cl <sub>3</sub> OP <sup>-</sup> Cl <sub>3</sub> PO <sup>-</sup> · -694±20 b	1.4±0.2			NBIP	$\Delta_f H(A) = -558 \pm 1$	<i>82TN270</i> 76MAT/ROT
					<del> </del>	
Cl <sub>3</sub> OV <sup>-</sup> VOCl <sub>3</sub> <sup>-</sup> <-1043±49	b_ 3.6±0.5			IMRB	$\Delta_f H(A) = -696$ EA: > Cl <sup>-</sup>	<i>82TN270</i> 75FLE/SVE
Cl <sub>3</sub> O <sub>2</sub> S <sup>-</sup>			<del></del>			
SO <sub>2</sub> Cl <sub>2</sub> ··Cl <sup>-</sup>						
<-644±21				IMRB	$Cl^{T}A: > Cl_2, SO_2$	79ROB/FRA
Cl <sub>3</sub> P-						
PCl <sub>3</sub>					$\Delta_f H(A) = -289 \pm 2$	85JANAF
-368±12 b	0.8±0.1			NBIP	•	76MAT/ROT
	> 3.6			IMRB	From PCI <sub>5</sub>	74HAL/KLE
Cl <sub>3</sub> Si <sup>-</sup>					$\Delta_f H(AH) = -481 \pm 8$	81BEUPER
SiCl <sub>3</sub>					BDE(A-H)= 382±4	81WAL
<-510±13 <sup>8</sup>	2.0	< 1501 <sup>e</sup>		EIAP	From SiCl <sub>4</sub>	77PAB/MAR
-589±21	3.5±0.4			EIAP	From SiCl <sub>4</sub>	68JAE/HEN
Cl <sub>3</sub> Sn <sup>-</sup>						
SnCt <sub>3</sub>						
J	3.4±0.2			NBAP	From SnCl <sub>4</sub>	83LAC/MAN
	3.7±0.5			NBAP	From SnCl <sub>4</sub>	79MAT/ROT
	2.53±0.01			EIAP	From SnCl <sub>4</sub>	78PAB/MAR
-583	2.5			EIAP	From SnCl <sub>4</sub>	77PAB/PER
Cl <sub>3</sub> Ti <sup>-</sup>						
TiCl3 <sup>-</sup>					$\Delta_f H(A) = -542 \pm 2$	82TN270
-601±18 b	0.6±0.2			NBAP	From TiCl <sub>4</sub>	79MAT/ROT
	0.6±0.1			EIAP	From TiCl <sub>4</sub>	78PAB/MAR
-597±13	0.6±0.2			EIAP	From TiCl <sub>4</sub>	74BEN/PAB
Cl <sub>3</sub> V <sup>-</sup>						
VCI3						
-569±48	2.2±0.5			EIAP	From VOCI <sub>3</sub>	75FLE/SVE
Cl <sub>4</sub> I <sup>-</sup>						
ICI <sub>4</sub>						
-631				Latt		77FIN/GAT
Cl <sub>4</sub> Nb <sup>-</sup>						
NbCl <sub>4</sub>					$\Delta_f H(A) = -561 \pm 2$	82TN270
<-696 b	>1.4			EIAP	From NbCl <sub>5</sub>	75BEN/MAR
Cl <sub>4</sub> Sn <sup>-</sup>		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
SnCl <sub>4</sub> -					$\Delta_f H(A) = -472 \pm 2$	82TN270
-684±21 b	2.2+0.2			NBIP	-1.11.A	83LAC/MAN
-084±21 -						

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
		Zirati(X-1)	ZO <sub>aff</sub> (X·····)			
Cl <sub>4</sub> Ta <sup>-</sup> TaCl <sub>4</sub> -					$\Delta_f H(A) = -561 \pm 2$	COTMOZO
<-696 b	> 1.4			EIAP	•	<i>82TN270</i> 75BEN/MAR
Cl <sub>4</sub> Ti <sup>-</sup>						
TiCl <sub>4</sub> -	<b>b</b>				$\Delta_f H(A) = -763 \pm 2$	85JANAF
-1041±17 <sup>l</sup>	2.9±0.2			NBIP		79MAT/ROT
Cl <sub>5</sub> Si <sup>-</sup>						
SiCl <sub>4</sub> ··Cl <sup>-</sup> * -986±12 <sup>c</sup>		101±8 <sup>g</sup>	74.0	D (DP		
-700±12		101±00	74±8	IMRE	***	85LAR/MCM
Co <sup>-</sup>						
Co <sup>-</sup> * 361±2 <sup>b</sup>	0.662±0.0	003 1437±5 <sup>e</sup>		LPES	$\Delta_f H(A) = 425 \pm 2$	82TN270
372 <sup>a</sup>	0.00240.0	143712	1395±13	IMRB		86LEO/LIN 85SAL/LAN
~ **						
CoH- CoH-					$\Delta_f H(A) = 477 \pm 13$	81ARM/BEA
* 412±14 b	0.671±0.0	10		LPES	111(A) = 477±13	87MIL/FEI
CoH <sub>2</sub> -						
CoH <sub>2</sub>						
• -	1.450±0.0	14		LPES		86MIL/FEI
CoD <sub>2</sub> -						
CoD <sub>2</sub>						
*	1.465±0.01	13		LPES		86MIL/FEI
Co <sub>2</sub> -						
Co <sub>2</sub> -					$\Delta_f H(A) = 683 \pm 8$	82TN270
* 576±9 b	1.110±0.00	08		LPES		86LEO/LIN
Cr-						
Cr b					$\Delta_f H(A) = 397 \pm 2$	82TN270
* 332±3 <sup>b</sup>	0.666±0.01	12	1200 . 12	LPES		85HOT/LIN
		······	1389±13	IMRB		85SAL/LAN
CrCl-						
CrCl <sup></sup> . -145±48	1.1±0.2				$\Delta_f H(A) = 48 \pm 48$	69FLEIWHI
-14JI40	1.1XU.Z			CIAP	From CrO <sub>2</sub> Cl <sub>2</sub>	69FLE/WHI
CrCl <sub>2</sub> -						
CrCl <sub>2</sub> <sup></sup> -309±48	1.7±0.2				$\Delta_f H(A) = -128 \pm 2$	82TN270
-3U7±40	1./±U.Z			EIAP	From CrO <sub>2</sub> Cl <sub>2</sub>	69FLE/WHI
rF-						
CrF .	1 0+0 4				$\Delta_f H(A) = 21$	81WOO
<b>-67±</b> 48	1.0±0.4			EIAP	From CrO <sub>2</sub> F <sub>2</sub>	69FLE/WHI

Table 2. Negative Ion Table - Continued

-		Table	2. Negative 10	n rabie	- Continueu	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CrFO <sup>-</sup> CrOF <sup>-</sup> -367±48	0.7±0.2			EIAP	$\Delta_f H(A) = -309 \pm 48$ From CrO <sub>2</sub> F <sub>2</sub>	<i>69FLE WHI</i> 69FLE/WHI
CrFO <sub>2</sub> - CrO <sub>2</sub> F- -724±48	2.5±0.2			EIAP	$\Delta_f H(A) = -473 \pm 48$ From $\text{CrO}_2\text{F}_2$	<i>69FLEJWHI</i> 69FLE/WHI
CrF <sub>2</sub> <sup>-</sup> CrF <sub>2</sub> <sup>-</sup> -540±48	1.5±0.4			EIAP	$\Delta_f H(A) = -216$ From CrO <sub>2</sub> F <sub>2</sub>	<i>81WOO</i> 69FLE/WHI
CrF <sub>2</sub> O <sup>-</sup> CrOF <sub>2</sub> <sup>-</sup> -820±48	2.1±0.1			EĨAP	$\Delta_f H(A) = -618 \pm 48$ From $CrO_2F_2$	<i>69FLE/WHI</i> 69FLE/WHI
CrH <sup>-</sup> CrH <sup>-</sup>	0.563±0.01	0		LPES		87MIL∕FEI
CrHO <sub>3</sub> <sup>-</sup> HCrO <sub>3</sub> <sup>-</sup> -1132±40	2.37±0.42 <sup>i</sup>	i		TDEq		72MIL
CrH <sub>2</sub> - CrH <sub>2</sub> -	> 2.500			LPES		86MIL/FEI
CrKO <sub>4</sub> <sup>-</sup> KCrO <sub>4</sub> <sup>-</sup> -1000±16				TDEq		85RUD/SID
CrO <sup>-</sup> CrO <sup>-</sup> 183±48	1.3±0.7			EIAP	$\Delta_f H(A) = 218\pm29$ From CrO <sub>2</sub> F <sub>2</sub>	<i>83PED/MAR</i> 69FLE/WHI
CrO <sub>2</sub> <sup>-</sup> CrO <sub>2</sub> <sup>-</sup> <-594±42 -280±48	2.3±0.7			IMRB EIAP	$\Delta_f H(A) = -59\pm21$ From $CrO_2F_2$	<i>82TN270</i> 72MIL 69FLE/WHI
CrO <sub>3</sub> - CrO <sub>3</sub> - -674±27 -838±82 <sup>a</sup>				TDEq TDEq	$\Delta_f H(A) = -386 \pm 2$	<i>82TN270</i> 85RUD/SID 72MIL
CrO <sub>4</sub> <sup>-</sup> CrO <sub>4</sub> <sup>-</sup> -785±30				TDEq	i de la compansión de l	85RUD/SID

Table 2. Negative Ion Table - Continued

<del></del>			2. Negative to				
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method		Comment	Reference
Cr <sub>2</sub> O <sub>6</sub> -							
Cr <sub>2</sub> O <sub>6</sub>	1.6±0.3			EIAP	From (CrO <sub>3</sub> ) <sub>3</sub>		75WAN/MAR
Cr <sub>3</sub> O <sub>9</sub> -							
Cr <sub>3</sub> O <sub>9</sub>	1.8			FIAP	From (CrO <sub>3</sub> ) <sub>5</sub>		75WAN/MAR
0							
Cs <sup>-</sup>					$\Delta_f H(A) = 76$		82TN270
* 31±5 <sup>a</sup>	0.472	1445±3 <sup>c</sup>		LPD			85HOT/LIN
CsI <sub>2</sub> <sup>−</sup> CsI··I <sup>−</sup>							
-492±5 c		151±5		TDAs			79GUS/GOR
Cs <sub>2</sub> I <sub>3</sub>						<del></del>	
Cs <sub>2</sub> I <sub>2</sub> ··I <sup>−</sup> -766±13		115±13 <sup>k</sup>		TDAs			79GUS/GOR
Cu <sup>-</sup>					·····		
Cu <sup></sup>					$\Delta_f H(A) = 338$		82TN270
* 220±1 b	1.228±0.0	10 1459±22 <sup>f</sup>		LPES			85HOT/LIN
Cu <sub>7</sub> - Cu <sub>7</sub> -							
ou <sub>1</sub>	1.870±0.08	80		LPES			86ZHE/KAR
Cug <sup>-</sup>							
Cu <sub>8</sub> <sup></sup>	< 1.440			LPES			86ZHE/KAR
Cu <sub>9</sub> -							
Cu <sub>9</sub>	0.050.00	<b>.</b>		* 220			0457757711
	2.270±0.06	<del></del>		LPES			86ZHE/KAR
Cu <sub>10</sub> - Cu <sub>10</sub> -					•		
	2.010±0.06	50		LPES			86ZHE/KAR
Cu <sub>11</sub> -							
Cu <sub>11</sub>	2.380±0.06	50		LPES			86ZHE/KAR
 Cu <sub>12</sub> <sup>-</sup>	<del></del>						
Cu <sub>12</sub> -	2.140±0.07	70		LPES			967UU <i>II</i> A D
	∠.140±0.0/			LFES			86ZHE/KAR
Cu <sub>13</sub> -							
••	2.605±0.17	25		LPES			86ZHE/KAR

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment Comment	Reference
Cu <sub>14</sub> <sup>-</sup> Cu <sub>14</sub> <sup>-</sup>	2.075±0.02	25		LPES		86ZHE/KAR
Cu <sub>15</sub> - Cu <sub>15</sub> -	2.575±0.13	35		LPES		86ZHE/KAR
Cu <sub>16</sub> - Cu <sub>16</sub> -						
	2.325±0.11	.5		LPES		86ZHE/KAR
Cu <sub>17</sub> - Cu <sub>17</sub> -	<2.720			LPES		86ZHE/KAR
Cu <sub>18</sub> <sup>-</sup> Cu <sub>18</sub> <sup>-</sup>	2.570±0.13	0		LPES		86ZHE/KAR
Cu <sub>19</sub> - Cu <sub>19</sub> -	2.705±0.26	5		LPES		86ZHE/KAR
F- F- * -249±2 <sup>a</sup>	3.399±0.00	3 1554±1 <sup>c</sup>	1530±2 h 1530±8	PLA IMRE	Δ <sub>f</sub> H(A)= 79	<i>85JANAF</i> 85HOT/LIN 79BAR/SCO
FHI <sup>-</sup> HF··I <sup>-</sup> • -524±10 °		63±8		Est	Extrapolated from other bihalide data	84LAR/MCM3
FH <sub>2</sub> O <sup>-</sup> HOH··F <sup>-</sup> -588 <sup>c</sup>		97±8	76±8	TDAs		70ARS/YAM
FH <sub>2</sub> S <sup>-</sup> HSH··F <sup>-</sup> • -414±11 °		145±8 <sup>g</sup>	121±8	IMRE		83LAR/MCM
FK <sup>-</sup> KF <sup>-,</sup> -427±22 <sup>b</sup>	1.0±0.2 <1.50 0.2 >1.3			EIAP IMRE Scat EIAP	$\Delta_f H(A) = -327 \pm 2$ From $K_2BO_2F$ From $(KF)_2$	85JANAF 76SHE/ILJ 80SID/SKO 79DEV/WIJ 64EBI
FLIT LIFT:	>1.4			EIAP	$\Delta_f H(A) = -340$ From (LiF) <sub>2</sub>	<i>82TN270</i> 64EBI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) ) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
FN-						
FN <sup>-</sup> · 184±2 b	0.5			EIAP	$\Delta_f H(A) = 232 \pm 2$	<i>84BER GRE</i> 82SID
FNP-						
NPF						
<-285				IMRB	$NH_2^- + PF_3 \rightarrow$	78SUL/BEA
FNa-						
NaF.					$\Delta_f H(A) = -291$	82TN270
−399±20 <sup>b</sup>				EIAP	From Na <sub>2</sub> BO <sub>2</sub> F	76SHE/ILJ
	0.4 >1.4			Scat	Para Alam	79DEV/WIJ
	~ 1.4 —			EIAP	From (NaF) <sub>2</sub>	64EBI
FNa <sub>2</sub>						
Na <sub>2</sub> F				****		
-300±42				EIAP	From Na <sub>2</sub> BO <sub>2</sub> F	76SHE/ILJ
FO-					$\Delta_f H(AH) = -96 \pm 4$	82BAUICOX
FO <sup>-</sup>					BDE(A-H)= 412±13	82BAU/COX
-89±13 <sup>b</sup>	2.05±0.08			EIAP	From F <sub>2</sub> O	84ALE/VOL
	> 1.4±0.5			EIAP	From CF <sub>3</sub> OF	70THY/MAC
FOV-						
VOF-						
-473±48	1.2±0.4			EIAP	From VOF <sub>3</sub>	75FLE/SVE
FO <sub>2</sub> S <sup>-</sup>						
so <sub>2</sub> ··F						
* -729±12 <sup>c</sup>		183±8 <sup>g</sup>	154±8	IMRE		83LAR/MCM
<-595				EIAP	From SO <sub>2</sub> F <sub>2</sub>	80WAN/FRA
-511	2.0			IMRB		78SUL/BEA2
-715	2.8			SI	E CO F	69PAG/GOO
-/15		·····		EIAP	From SO <sub>2</sub> F <sub>2</sub>	58REE/DIB
FO <sub>3</sub> S <sup>-</sup>						
SO <sub>3</sub> ··F	d					
* -971±45 <sup>c</sup>		326±42 g	297±42	IMRB		85LAR/MCM
<-971±13 <sup>a</sup>		< 1312±8		EIAP	From FSO <sub>3</sub> H (Appearance Potential = 0 eV)	86ADA/SMI
FS-						
FS <sup>-</sup>					$\Delta_f H(A) = 13 \pm 6$	85JANAF
-180±55 <sup>b</sup>	2.0±0.5			Est	From trends in EA of SF <sub>x</sub>	82JANAF
FXe <sup>-</sup>						
Xe··F						
-276 <sup>c</sup>		27±4		Mobl		79DEV/WIJ2
F <sub>2</sub> -						
F <sub>2</sub>						
-297 b	3.1			ECD	Vertical EA: 1.24 eV	81AYA/WEN
	2.9±0.2				From NF <sub>3</sub>	74HAR/FRA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>2</sub> -						
F <sub>2</sub>						
	2.9±0.2			EIAP	From BF <sub>3</sub>	71DEC/FRA
	3.2			EIAP	From SO <sub>2</sub> F <sub>2</sub>	80WAN/FRA
	> 2.8±0.3			EIAP	From CF <sub>2</sub> O	72THY
·	3.1±0.1			EnCT	-	71CHU/BER
	> 3.0			EIAP	From SO <sub>2</sub> F <sub>2</sub>	58REE/DIB
₹2Ge <sup>−</sup>	****					
GeF2-					$\Delta_f H(A) = -573$	81W00
-695±29	> 1.3±0.3			EIAP	From GeF <sub>4</sub>	72HAR/CRA
F <sub>2</sub> H <sup>-</sup>						
FH··F				-		
• -683±11 °		162±8 <sup>g</sup>	134±8	IMRE		83LAR/MCM
<-666±19		> 145±19 k		EIAP	From CHF = CHF	85HEN/ILL
		<del> </del>				
F <sub>2</sub> HNOP						
HNOPF2						
<-1079				IMRB		78SUL/BEA
			NH <sub>2</sub> + OPF <sub>3</sub> -	→ HNOPI	$F_2^- + HF$ ; $HNOPF_2^- + OPF_3 \rightarrow (F_3PO)_2N^- + HF$	
F <sub>2</sub> HNP-						
HNPF2						
<-556				IMRB	$NH_2^- + PF_3 \rightarrow$	78SUL/BEA
F <sub>2</sub> K <sup>-</sup>						
KF··F						
-806±11 °		224±3		TDAs		81NIK/SID
-790±6 c		200±4			F <sup>-</sup> A: 1100K; ΔHf(KF <sub>2</sub> <sup>-</sup> ): 298K	80SID/NIK
<-803±21		2002.		1024	1 15 110014 Zin(in Z ), 27011	79GUS/GOR
- M						<del></del>
<sup>7</sup> 2Mn <sup>−</sup>					$\Delta_f H(A) = -525$	81W00
MnF <sub>2</sub> <sup>-</sup> · -943±15 b	A 36±0 15			TDEq	14 H(A) = -325	82SID/GUB
713113	4.5010.15	<del></del>		IDEA	· · · · · · · · · · · · · · · · · · ·	0231D/GOD
72N-					$\Delta_f H(AH) = -65 \pm 6$	69PANIZER
NF <sub>2</sub>					BDE(A-H)= 314±10	84BER/GRE
	1.28±0.20 °	1 1502±10 g	1473±8	<b>IMRE</b>		86TAF
			1477	IMRE		81KOP/PIK
-123±31	1.7±0.2			EIAP	From NF <sub>3</sub>	74HAR/FRA
<-45±19	> 0.7±0.2			EIAP	From NF <sub>3</sub>	79DUD/BAL
	>0.4±0.1				From N <sub>2</sub> F <sub>4</sub>	78DUD/BAL
	3.0			SI	<b>₩</b> ₹	69PAG/GOO
NOD-	**************************************				· · · · · · · · · · · · · · · · · · ·	······································
2NOP						
ONPF2-						

Table 2. Negative Ion Table - Continued

			=			
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>2</sub> OP						
F <sub>2</sub> PO						
<-962					HNO <sup>-</sup> + OPF <sub>3</sub> →	78SUL/BEA
-448±19	3.4±0.2			EIAP	From F <sub>3</sub> PO	71RHY/DIL
F <sub>2</sub> OPS						
F <sub>2</sub> POS						
<-1033				IMRB	HS <sup>-</sup> + OPF <sub>3</sub> →	78SUL/BEA
F <sub>2</sub> OV						
VOF <sub>2</sub>						
-925±48	2.8±0.5			EIAP	From VOF <sub>3</sub>	75FLE/SVE
F <sub>2</sub> O <sub>2</sub> P <sup>-</sup>		***************************************		***************************************		
F <sub>2</sub> PO <sub>2</sub> -						
<-1167				IMRB	$HO^- \text{ or } EtO^- + OPF_3 \rightarrow$	78SUL/BEA
F <sub>2</sub> O <sub>2</sub> S <sup>-</sup>				.,		
SO <sub>2</sub> F <sub>2</sub> <sup>-</sup> .					$\Delta_f H(A) = -759 \pm 8$	87HER
2 2	< 3.1			IMRB	EA: < F <sub>2</sub>	78GAL/FAI
	<del></del>		····			
F <sub>2</sub> O <sub>2</sub> U <sup>-</sup>						
UO <sub>2</sub> F <sub>2</sub>	3.36±0.52			TDEq		84GOR/PYA
F <sub>2</sub> P <sup>-</sup>					A 1741 400-0	04BED/CBE
PF <sub>2</sub> <sup>-</sup> -636±51 <sup>b</sup>	1.6±0.5			EIAP	$\Delta_f H(A) = -482\pm 2$ From PF <sub>2</sub> NCS	<i>84BER/GRE</i> 72THY
0301231	> 1.6±0.5			SI	110112.1100	69PAG/GOO
	1.5±0.5			Est2		82JANAF
E. DC-						
F <sub>2</sub> PS <sup>-</sup> F <sub>2</sub> PS <sup>-</sup>						
- 2	2.6±1.0			EIAP	From PF <sub>3</sub> S	71RHY/DIL
F2 X7=		· · · · · · · · · · · · · · · · · · ·				
F <sub>2</sub> V <sup>-</sup> VF <sub>2</sub> <sup>-</sup>						
-703±48	0.4±0.5			EIAP	From VOF <sub>3</sub>	75FLE/SVE
F <sub>3</sub> Cr <sup>-</sup>						
CrF <sub>2</sub> ··F¯ −1124±15				TDEq		83IGO
F <sub>3</sub> Cu <sup>-</sup>						
$CuF_2 \cdot \cdot F$	>5.26 i	351±17		TDE	Amaham DT A/Par Near Near III/VAD	86KUZ/KOR
	> 5.20	331£17		ibeq	Anchor: F-A(FeF <sub>3</sub> ) 84CHI/KOR	80K0Z/KOK
F <sub>3</sub> Fe <sup>-</sup>						
FeF <sub>2</sub> ··F		i		PA		car man
-1069±12 <sup>c</sup>	3.62±0.13	359±9	Corrections to 91	TDEq	hatter neutral pressure determination	86SID/BOR
		374±17	Corrections to 81	TDEq	, better neutral pressure determination	86KUZ/KOR
		217411				301102/11011

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$		Method	Comment	Reference
F <sub>3</sub> Fe <sup>-</sup> FeF <sub>2</sub> ··F <sup>-</sup> -1138±14 <sup>c</sup>	4.30±0.20	i 441±14		TDEq	F <sup>-</sup> A: 64±5 kJ < AIF <sub>3</sub>	81SOR/SID
F <sub>3</sub> Ge <sup>-</sup> GeF <sub>3</sub> <sup>-</sup>						
-860±21 -858	1.1±0.4 1.6			EIAP EIAP	From GeF <sub>4</sub> From GeF <sub>4</sub>	74WAN/MAR 74FRA/WAN
	3.1±0.1			EIAP	From GeF <sub>4</sub>	72HAR/CRA
F <sub>3</sub> Mn <sup>-</sup> MnF <sub>2</sub> ··F	<b>:</b>					01070 (000
-1213 <sup>c</sup>	4.36 <sup>i</sup>	430		TDEq		81SID/SOR
F <sub>3</sub> Ni⁻ NiF <sub>2</sub> ··F⁻						001111100
		338±15		TDEq	Reanalyzed literature data, 150 kJ < AlF <sub>3</sub>	86NIK/IGO
F <sub>3</sub> OS <sup>-</sup> F <sub>2</sub> SO··F <sup>-</sup>		155.05	7 126.0	n.me		921 A D BACM
* -904±42 <sup>c</sup>		156±8 &	3 126±8	IMRE		83LAR/MCM
F <sub>3</sub> OV <sup>-</sup> VOF <sub>3</sub> <sup>-</sup> ·	21.01			n.cop	$\Delta_f H(A) = -1234 \pm 29$	75FLEISVE
	3.1±0.4			IMRB	EA: > VOP <sub>2</sub> -, < F	75FLE/SVE
F <sub>3</sub> OW-						
wor <sub>3</sub>	>0.3			EIAP	From WOF <sub>4</sub>	77HIL
F <sub>3</sub> O <sub>2</sub> S <sup>-</sup> SO <sub>2</sub> F <sub>2</sub> ··F <sup>-</sup>						
* -1157±19 <sup>c</sup> -1284±21		150±8 <sup>£</sup>	3 115±8	IMRE IMRB		83LAR/MCM 78GAL/FAI
F <sub>3</sub> Pb <sup>-</sup>						
PbF <sub>3</sub> <sup></sup> -867±54	3.7			EIAP	$\Delta_f H(A) = -510 \pm 54$ From PbF <sub>4</sub>	75BEN/WAN 75BEN/WAN
-887	4.3			EIAP	From PbF <sub>4</sub>	74FRA/WAN
F <sub>3</sub> S <sup>-</sup>						
SF <sub>3</sub>					$\Delta_f H(A) = -488 \pm 25$	87HER
-785±44 b					From SF <sub>6</sub>	78COM/REI
	2.9±0.1 2.7±0.7			EIAP Est	From SF <sub>4</sub> Reanalysis: 71HAR/THY	71HAR/THY 82JANAF
	2.7±0.7			SI		69PAG/GOO
F <sub>3</sub> Se <sup>-</sup> SeF <sub>3</sub> <sup>-</sup>						
-774				EIAP	From SeF <sub>6</sub>	69BRI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>3</sub> Si <sup>-</sup>					$\Delta_f H(AH) = -1201 \pm 21$	85JANAF
SiF <sub>3</sub>					$BDE(A-H) = 419\pm4$	81WAL
• -1284±35 a	2.9±0.1	1446±14 <sup>e</sup>	1414±15 <sup>h</sup>	PD	·	75RIC/STE4
-1176	2.0			EIAP	From SiF <sub>4</sub>	74FRA/WAN
-1176	2.0			EIAP	From SiF <sub>4</sub>	73WAN/MAR
	3.7			EIAP	From SiF <sub>4</sub>	70MAC/THY
	3.4			SI	4	69PAG/GOO
F <sub>3</sub> Sn <sup>-</sup>						
SnF <sub>3</sub>						
ū	> 1.2			EIAP	From SnF <sub>4</sub>	77PAB/PER
-632	> 1.2			EIAP	From SnF <sub>4</sub>	75BEN/WAN
-887	2.6			EIAP	From SnF <sub>4</sub>	74FRA/WAN
F <sub>3</sub> V <sup>-</sup> VF <sub>3</sub> <sup>-</sup>						
_	1.6±0.4			EIAP	From VOF <sub>3</sub>	75FLE/SVE
F <sub>4</sub> Cr <sup>-</sup>		- <u></u>				
CrF <sub>3</sub> ··F						
-1467±15				TDEq		83IGO
			$FeF_3^- + CrF_4^-$	-	$+ \operatorname{CrF}_3^-, \Delta_{\operatorname{rxn}} H = 9 \mathrm{kJ}$	
Tr 17:-						<del></del>
F <sub>4</sub> Fe <sup>-</sup>						
FeF3··F		451 . 10		TTD17-	TTA. 02 ELT > T-P	OCCID (DOD
-1423±18 <sup>c</sup> -1490 <sup>c</sup>		451±10			$FA: 92.5 \text{ kJ} > \text{FeF}_2$	86SID/BOR
	5.45.0.50	456±14			F'A: 37 kJ < AIF <sub>3</sub>	84CHI/KOR
-1412±14 <sup>c</sup>	3.43±0.20	1 439±14		TDEq	F'A: 62 kJ < AIF <sub>3</sub>	81SOR/SID
F4Ge2						
Ge <sub>2</sub> F <sub>4</sub>						
<-121				IMRB		72HAR/CRA
F <sub>4</sub> La <sup>-</sup>						
$LaF_3 \cdot \cdot F$						
-2004±33				TDEq		79GUS/GOR
F <sub>4</sub> Mn <sup>-</sup>						
$MnF_3 \cdot \cdot F^-$						
-1463±60 <sup>c</sup>		. 421±13		TDEq	$F^A: 72\pm 3 \text{ kJ} < AIF_3$	84CHI/KOR
-1466±60	5.23±0.03	i		TDEq	$F^-A:79 \text{ kJ} < AlF_3$	84KOR/CHI
F <sub>4</sub> OP-						
$F_3PO \cdot F^-$						
• -1660±13 <sup>c</sup>		200±8 <sup>g</sup>	168±8	IMRE		85LAR/MCM
-1594±46 <sup>c</sup>		134±42		IMRB	$FA: SF_4 > F_3PO > SF_5$	71RHY/DIL
F <sub>4</sub> OU <sup>-</sup>	<del></del>					
UOF3··F						
	3.80±0.43			TDEq		84GOR/PYA

Table 2. Negative Ion Table - Continued

$\begin{array}{c} \text{Ion } \Delta_{\mathbf{f}} H(\mathbf{A}^{-}) \\ \Delta_{\mathbf{f}} H(\mathbf{X} \cdot \cdot \mathbf{Y}^{-}) \end{array}$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>4</sub> P-						
PF <sub>3</sub> ··F						
* -1336±13 <sup>c</sup>		168±8 <sup>g</sup>	136±8	IMRE		83LAR/MCM
		209±21		IMRB	$F^-A$ : < OPF <sub>3</sub> , > F, SF <sub>4</sub> , Me <sub>3</sub> SiF, HCN, SO <sub>2</sub>	78SUL/BEA
F <sub>4</sub> PS <sup>-</sup>						
$F_3PS \cdot F$						
-1374±106	c	134±42		IMRB	FA: between SF <sub>4</sub> , SF <sub>5</sub>	71RHY/DIL
F <sub>4</sub> Pt <sup>-</sup>						
PtF4					$\Delta_f H(A) = -524 \pm 25$	83KOR/BON
,	5.20±0.16			TDEq	EA: $2.5 \text{ kJ} > \text{MnF}_4$	84KOR/CHI
F <sub>4</sub> Rh <sup>-</sup>	··········		-			
RhF <sub>4</sub>	ا د موس					
	5.00±0.20	401±14		TDEq	F <sup>-</sup> A: 22 kJ < MnF <sub>3</sub>	84CHI/KOR
F <sub>4</sub> S <sup>-</sup>						
SF <sub>4</sub> <sup></sup>					$\Delta_f H(A) = -763 \pm 21$	85JANAF
* -990±31 b	2.4±0.1			IMRB	EA: between NO <sub>2</sub> , HS	81BAB/STR2
	0.8±0.2			NBIP		78COM/REI
	1.3±0.1			ES		74DON/HAR
F <sub>4</sub> Sc <sup>-</sup> ScF <sub>3</sub> ··F <sup>-</sup>						
-2013±13 °		495±10		TDEq	$F^-A: 10 \text{ kJ} < AiF_3$	81SKO/NIK
-2009±13 <sup>c</sup>		487±10		TDEq	$F^*A: 17 \text{ kJ} < AlF_3$	81NIK/SID
		470±10		TDEq	Reanalyzed data, 18 kJ < AlF <sub>3</sub>	86NIK/IGO
F <sub>4</sub> Se <sup>-</sup>						
SeF <sub>4</sub>	17.01			ELAD	English Call	6011 4 D 67111
-795±42	1.7±0.1			EIAP EIAP	From SeP <sub>6</sub> From SeP <sub>6</sub>	73HAR/THY 69BRI
F <sub>4</sub> Te <sup>-</sup> TeF <sub>4</sub>						
1614	2.2±0.1			EIAP	From TeF <sub>6</sub>	73HAR/THY
-895±42	o-su≟.V. ±			EIAP	10111 2016	69BRI
F <sub>4</sub> Ti <sup>-</sup>	<u> </u>		<del></del>			
TiF <sub>4</sub>					$\Delta_f H(A) = -1552 \pm 2$	82TN270
4	> 0.0			EIAP	-1····	74BEN/PAB
F <sub>4</sub> U <sup>-</sup>					A. H/A)1500+2	gaTN/aza
UF <sub>4</sub> <sup>-</sup> * -1725±30	1.24±0.36 i	415±42 <sup>k</sup>		TDEA	$\Delta_f H(A) = -1599 \pm 2$ Critical review	82TN270
1720150	< 1.8	415142		IMRB	Cilical Toviow	84PYA/GUS 80SID/SKO
F <sub>4</sub> W <sup>-</sup> WF <sub>4</sub> <sup>-</sup> ·					$\Delta_f H(A) = -1029$	81W00
-1280 b	2.6				From WF <sub>6</sub>	
-1280 -	2.0			Tritai	1.10111 441.2	77DEW/NEU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>4</sub> W <sup>-</sup> WF <sub>4</sub> <sup>-</sup> ·	>1.0			EIAP	$\Delta_f H(A) = -1029$ From WF <sub>6</sub>	81WOO 77HIL
F <sub>5</sub> Cr <sup>-</sup> CrF <sub>4</sub> ··F <sup>-</sup> -1753±15				TDEq		83IGO
			FeF <sub>3</sub> + CrF <sub>5</sub>	= FeF <sub>4</sub>	$+ \operatorname{CrF}_4^-, \Delta_{\operatorname{rxn}} H = -48 \mathrm{kJ}$	
F <sub>5</sub> Fe <sub>2</sub> <sup>-</sup> FeF <sub>2</sub> ··FeF <sub>3</sub> <sup>-</sup> * -1740±43 c -1769±17 c	3.80±0.40	i 202±37 201±4		TDEq TDAs	$\Delta_{ m f} H({ m A}^-)$ at 0K	86SID/BOR 81SOR/SID
F <sub>5</sub> Ge <sup>-</sup> GeF <sub>4</sub> ··F <sup>-</sup> -1856±26 <-2038 °		418±29 k > 405		Latt IMRB		84MAL/ROS 72HAR/CRA
F <sub>5</sub> Hf <sup>-</sup> HfF <sub>5</sub> <sup>-</sup> -2386±17 °		429±17 405±9			Reanalyzed literature data, 59 kJ < AlF <sub>3</sub> F <sup>-</sup> A: 84 kJ < AlF <sub>3</sub>	86NIK/IGO 80NIK/SOR
F <sub>5</sub> Mn <sup>-</sup> MnF <sub>5</sub> <sup>-</sup> -1565±84		348±84		TDEq	F <sup>-</sup> A: 73 kJ < MnF <sub>3</sub>	84KOR/CHI
F <sub>5</sub> Mo <sup>-</sup> MoF <sub>5</sub> <sup>-</sup>	> 3.5 > 3.3±0.4				$\Delta_f H(A) = -1241$ From MoF <sub>6</sub> From MoF <sub>6</sub>	<i>85JANAF</i> 78COM/REI 77MAT/ROT
F5Pt <sup>-</sup> PtF5 <sup>-</sup>	6.50			TDEq		79SID/NIK
F <sub>5</sub> S <sup>-</sup>						
* -1195±31 <sup>c</sup> <-1263±33 -1251±25 -1269±33 <sup>b</sup>	> 3.7±0.3 <sup>i</sup>	i 183±8 g	151±8	NBAP Est NBAP NBAP EnCT	F'A: SF <sub>4</sub> > SF <sub>5</sub> From SF <sub>6</sub> Literature average From SF <sub>6</sub> , new EA(F')	83LAR/MCM 81BAB/STR2 74LEF/TAN 82JANAF 78COM/REI 75HUB/LOS 73LIF/ITE 73COM/COO 61CUR2 64KAY/PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
-		ZII aff (X 1 )				
F <sub>5</sub> Se <sup>-</sup>					$\Delta_f H(A) = -476 \pm 42$	69BRI
SeF <sub>5</sub> <sup>-</sup>	>5.1 <sup>i</sup>			NTD A D	From SeF <sub>6</sub>	78COM/REI
-1385±40	3.3±0.1			EIAP	_	73HAR/THY
<-1197	3.3±0.1			EIAP	From SeF <sub>6</sub>	69BRI
F_C:-						
F <sub>5</sub> Si <sup>-</sup>						
SiF <sub>4</sub> ··F <sup>-</sup> • -2115±19 c		251±17 <sup>g</sup>	226±17	IMRE		85LAR/MCM
-2115±19		285±21	220117		$F^-A: < BF_3, > iPr_2BF$	77MUR/BEA3
<-2318		283121		IMRB	1 1. 1 213, 7 1.1221	70MAC/THY
F <sub>5</sub> Te <sup>-</sup>			<u> </u>			
TeF5					$\Delta_f H(A) = -586 \pm 42$	69BRI
3	4.5			NBAP	From TeF <sub>6</sub>	78COM/REI
	4.2±0.1			EIAP	From TeP <sub>6</sub>	73HAR/THY
<-1397				EIAP	From TeF <sub>6</sub>	69BRI
F <sub>5</sub> Th <sup>-</sup>						
ThF <sub>4</sub> ··F						
-2432±13		436±15 <sup>k</sup>		TDEq	$F^-A: 88 \text{ kJ} < AlF_3, 15 \text{ kJ} < ZrF_4$	83SID/ZHU
F <sub>5</sub> U <sup>-</sup>						
UF <sub>5</sub>						
-2275±19 <sup>c</sup>	2.99±0.20	i 427±15		TDEq	Reanalyzed literature data, 61 kJ < AlF <sub>3</sub>	86NIK/IGO
* -2322±15	3.47±0.26	i 424 <sup>k</sup>		TDEq	Critical review, other literature data corrected	84PYA/GUS
-2256±4 <sup>c</sup>	3.30±0.16	i 410±1		TDEq	$FA: 93 kJ < AlF_3$	80SID/SKO
-2297±33	3.78±0.40	) <sup>i</sup> 448±36 <sup>k</sup>		TDEq		80PYA/GUS
-2297±33				TDEq		79GUS/GOR
-2297±33	> 1.9±0.4	i		NBAP	From UF <sub>6</sub>	77MAT/ROT
-2265±14	4.0±0.4 i			NBAP	From UF <sub>6</sub>	77COM
F <sub>5</sub> W <sup>-</sup>						
WF <sub>5</sub>					$\Delta_f H(A) = -1397$	81W00
>-1631	< 3.5			IMRB	EA: $WF_5 < WF_6$	79GEO/BEA
	> 1.8±0.3			NBAP	From WF <sub>6</sub>	78COM/REI
<-1338±25	>0.4±0.2			EIAP	From WF <sub>6</sub>	77HIL
	1.2±0.3			NBAP	From WF <sub>6</sub>	77DIS/LAC
	1.3±0.2			EIAP	From WF <sub>6</sub>	77DEW/NEU
-1409±29	0.8±0.2	270 <sup>k</sup>		EIAP	From WF <sub>6</sub>	73THY/HAR
 F <sub>5</sub> Zr <sup>-</sup>						
ZrF <sub>4</sub> ··F						
-2338±31 <sup>c</sup>		415±8		TDEq	$F^-A: 92\pm 3 \text{ kJ} < A1F_3$	82SKO/SOR
-2343±17 <sup>c</sup>		403±4		TDEq	F <sup>-</sup> A: 97 kJ < AIF <sub>3</sub>	81SKO/NIK
F <sub>6</sub> Fe <sub>2</sub>	7-5		,			
Fe <sub>2</sub> F <sub>6</sub>						
-2071±38	4.45±0.24	. i		TDEq		86SID/BOR

Table 2. Negative Ion Table - Continued

		1 a Die	2. Negative 10	n Table	- Continued	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F6Ge2						
Ge <sub>2</sub> F <sub>6</sub>						
<-117				IMRB		72HAR/CRA
F <sub>6</sub> Ir						
IrF6-					$\Delta_f H(A) = -544 \pm 21$	82TN270
•	>5.1±0.5			NBIP	·	78COM/REI
F <sub>6</sub> Mo						
MoF6-					$\Delta_f H(A) = -1558 \pm 1$	85JANAF
	>5.1±0.5			NBIP		78COM/REI
	>4.5±0.4			NBIP		77MAT/ROT
F <sub>6</sub> P-						
PF <sub>5</sub> ··F						
* -2200±46 <sup>c</sup>		356±42 g	308±42	IMRE		85LAR/MCM
		423±33		latt		84MAL/ROS
F <sub>6</sub> Pt <sup>-</sup>						
PtF6					$\Delta_f H(A) = -676 \pm 28$	86KORINIK
• -1448±57 b	8.00±0.30	•		TDEq	EA: $272 \text{ kJ} > \text{PtF}_4$	81NIK/SID2
	>5.1±0.5			NBIP		78COM/REI
F <sub>6</sub> Re						
ReF6					$\Delta_f H(A) = -1349$	84BARIYEH
· ·	>5.1±0.5			NBIP	•	78COM/REI
F <sub>6</sub> S <sup>-</sup>						
SF6-					$\Delta_f H(A) = -1221 \pm 1$	85JANAF
* -1322±10 b	1.05±0.10	159±15 <sup>k</sup>		TDEq	•	85GRI/CHO
	0.542			LPD		82DRZ/BRA
	0.8			Kine		83LIF
			Review: literatu:	re consiste	nt with $\Delta S^{\frac{1}{2}}$ for detachment = -59 J/mol-K	
	0.5±0.2			NBIP		78COM/REI
	$1.4\pm0.1$			Kine		83HEN/BEN
	> 0.7			ECD	•	83CHE/WEN
	1.2±0.3			Est	Literature average	82JANAF
<-1310				CIDT		78REF/FRA
	0.3±0.1			NBIP		75HUB/LOS
	0.8±0.1			NBIP		74LEF/TAN
	> 0.6±0.1			EnCT		73LIF/TIE
	0.5±0.1			NBIP		73COM/COO2
	0.5±0.2			NBIP		73COM/COO
	0.9±0.5			IMRB		71FEH
	0.4			IMRB		70LIF/HUG
	>0.7			ECD		68CHE/GEO
	1.1			ES		66COM/CHR
	1.5±0.2			SI		64KAY/PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>6</sub> Sb <sup>-</sup>		***************************************				
SbF <sub>5</sub> ··F	>6.0			NBAP	From Sb <sub>2</sub> F <sub>10</sub>	80COM/REI
					-2-10	· · · · · · · · · · · · · · · · · · ·
F <sub>6</sub> Se <sup>-</sup>					$\Delta_f H(A) = -1117 \pm 21$	82TN270
Seḟ <sub>6</sub> <sup>–.</sup> –1397±40 <sup>b</sup>	2.9±0.2			NBIP	Δfn(N) 1111 ± 1	78COM/REI
F <sub>6</sub> Te <sup>-</sup>						
TeF6-					$\Delta_f H(A) = -1318 \pm 21$	82TN270
* -1636±31 b	3.3±0.1			NBIP		78COM/REI
	3.3±0.2			NBIP		73COM/COO2
	3.3±0.2			NBIP		73COM/COO
F <sub>6</sub> U-				•		
UF6-		:			$\Delta_f H(A) = -2147 \pm 2$	82TN270
• -2680±25	5.58±0.31	_		-	Critical review	84PYA/GUS
-2649±30	5.20±0.34			_	F'A: 55±8 kJ > UF <sub>4</sub>	83SKO/SOR
-2628±24 <sup>c</sup>					F <sup>-</sup> A:(1100K) 14±1 kJ > UF <sub>4</sub> . $\Delta_f H(A^-)$ :298K	80SID/SKO
	6.33±0.50			TDEq		80PYA/GUS
-2724±42	5.8±0.3 i			Latt		84MAL/ROS
	> 3.6			IMRB		80STR/NEW 80ANN/STO
	>5.5			IMRB		77MAT/ROT
	>4.3±0.4 >5.1			NBIP NBIP		77COM
	> 3.1 4.9±0.5			IMRB	Endo F transfer to BF3 at 1.5 eV observed	76BEA
	2.9			SI	Zhuo i handioi to zi 3 al izo i cossivez	69PAG/GOO
F <sub>6</sub> W						
wr <sub>6</sub> -					$\Delta_f H(A) = -1722 \pm 8$	82TN270
-2046±28 b	3.4±0.2			IMRB	•	85VIG/PAU
-2061±25	3.5±0.1			IMRB	EA: > F, < Cl	79GEO/BEA
	>5.1±0.5			NBIP		78COM/REI
	>4.9±0.4			NBIP		77MAT/ROT
	3.7±0.2			NBIP		77DIS/LAC
	2.7			. <b>SI</b>		69PAG/GOO
F <sub>7</sub> Fe <sub>2</sub> -						
FeF <sub>3</sub> ··FeF <sub>4</sub>						
-2379±37 <sup>c</sup>	4.5±0.2 <sup>i</sup>	189±24		TDAs		86SID/BOR
-2280±18		204±4		TDAs	Δ <sub>f</sub> H(A¯) at 0K	81SOR/SID
F <sub>7</sub> MnPt <sup>-</sup>						
$MnF_3 \cdot PtF_4$						
-2054±105	,			TDEq		84KOR/CHI
F <sub>7</sub> Mn <sub>2</sub> -						
$MnF_3 \cdot \cdot MnF_4$	-					04100 1011
-2517±84				TDAs		84KOR/CHI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F <sub>7</sub> Sc <sub>2</sub> - ScF <sub>3</sub> ··ScF <sub>4</sub> -						
3		228±1	199±1	TDAs		81NIK/SID
F <sub>7</sub> U <sup>-</sup>						
UF6··F		_				
-2630±30		237±30 <sup>k</sup>		TDEq	Critical review	84PYA/GUS
-2588±46 °	2	192±42		IMRB		76BEA
F <sub>7</sub> W-						
w <sub>6</sub> ··F						
-2266±24	< 6.5	289±21 <sup>k</sup>		IMRB	$F^-A: SiF_4 < WF_6 < BF_3$	79GEO/BEA
F <sub>8</sub> Ge <sub>2</sub> -						
Ge <sub>2</sub> F <sub>8</sub>						
<-151				IMRB		72HAR/CRA
F <sub>8</sub> KSc <sub>2</sub>						
KScF <sub>4</sub> ··ScF <sub>4</sub>	-					
		144±3	120±4	TDAs		81NIK/SID
F <sub>8</sub> U <sub>2</sub> -						
U <sub>2</sub> F <sub>8</sub>						
>-3598±10	002.30 4			TDEq		84PYA/GOR
$F_9U_2^-$						
U <sub>2</sub> F <sub>9</sub> -	400 000	soo sok		(TOD E		04774 (007
-4130±30	4.30±0.52	500±50 k		TDEq		84PYA/GOR 80PYA/GUS
-4138±33				TDEq		80F1A/GUS
F <sub>9</sub> Zr <sub>2</sub> -						
ZrF <sub>4</sub> ··ZrF <sub>5</sub> <sup>-</sup> -4228±15 <sup>c</sup>	· •	214.4		TTD A a		925AV(20B
-4228±15		214±4		TDAs		82SKO/SOR
$F_{10}U_2^-$						
U <sub>2</sub> F <sub>10</sub> <sup>-</sup> -4490±30	4.50±0.40	i <i>520±50 k</i>		TIDE-		DADVA ICOD
-4490±30	4.50±0.40	320±30**		TDEq		84PYA/GOR
$F_{11}U_2^-$						
U <sub>2</sub> F <sub>11</sub>		i an ark				0.4771.4.(0.07)
-4850±40	6.10±0.70	i 540±50 k		TDEq		84PYA/GOR
$F_{12}U_2^-$						
U <sub>2</sub> F <sub>12</sub>	<b></b>	i		m		A (DT) . (#A=
>-5200±79	7.90±0.80			TDEq	·	84PYA/GOR
Fe <sup>-</sup>					$\Delta_f H(AH) = 471 \pm 29$	79DEN VAN
Fe <sup>-</sup>					BDE(A-H)= 163±29	79DENIVAN
* 402±1 b	0.151±0.0			LPES		86LEO/LIN
*	0.1/0.00	1420±13 <sup>g</sup>	1389±13	IMRB		85SAL/LAN
> 361±42 <sup>a</sup>	0.163±0.03	35 1420±13 <sup>e</sup>		LPES	From Re(CO)	85HOT/LIN
> 301±42 °	< U.3±U.2	1420±13		EIAP	From Fe(CO) <sub>5</sub>	76COM/STO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y)$	Method	Comment	Reference
FeH <sup>-</sup>	0.024.0.0	10		1 DEC		926777/12121
•	0.934±0.01	10		LPES		83STE/FEI
FeH <sub>2</sub> -						
FeH <sub>2</sub> -	1.049±0.01	14		LPES		86MIL/FEI
FeD <sub>2</sub> -						
FeD <sub>2</sub>						
•	1.038±0.01	13		LPES		86MIL/FEI
FeO <sup>-</sup>					$\Delta_f H(AH) = 133 \pm 17$	80MUR
FeO <sup>-</sup> * 107±56 <sup>a</sup>	1 402±0 03	20 1504±40 <sup>e</sup>		LPES	BDE(A-H) = 336±38	<i>85JANAF</i> 77ENG/LIN
107130	1.472.10.02	20 1504140				
Fe <sub>2</sub> - Fe <sub>2</sub> -					,	
•	0.902±0.00	08		LPES		86LEO/LIN
Ga <sup>-</sup>				DH	$\Delta_f H(AH) = 220 \pm 13$	<u> </u>
Ga <sup>-</sup>				2,,	$BDE(A-H) = 262\pm8$	81KAN/MOC
236±36 <sup>a</sup>	0.3±0.1	1546±23 <sup>e</sup>		PD		85HOT/LIN
Ge <sup>-</sup>						
Ge <sup>-</sup> • 258±2 <sup>b</sup>	1.233±0.00	13		LPES	$\Delta_f H(A) = 377 \pm 2$	<i>82TN270</i> 86MIL/MIL
GeH3 <sup>-</sup> GeH3 <sup>-</sup>					$\Delta_f H(AH) = 91 \pm 2$ $BDE(A-H) = 345 \pm 10$	82TN270 83NOB/WAL
• 50±17 a	1.739±0.04	1490±15 <sup>e</sup>	1455±15 <sup>h</sup>	LPD	BBENTY TOTAL	74REE/BRA
H-			· · · · · · · · · · · · · · · · · · ·			
H_					BDE(A-H)= 436	85JANAF
* 145 <sup>a</sup>	0.8 0.78±0.02	1675 <sup>e</sup>	1649 <sup>h</sup>	Calc PD	Given: 0.754209(3) eV	85HOT/LIN 70FEL
<del>/</del>	U.75±U.U2	·		- FD		
HIS <sup>-</sup> ISH <sup></sup>					A . L//A) 105	ZEDEC
-48	1.1			Endo	$\Delta_f H(A) = 105$ $I^- + H_2 S \rightarrow$	<i>76REF</i> 76REF
НI <sub>2</sub> - ні…г						
• -233±9 c		71±8	41±11	TDAs		85CAL/KEB
к <sub>2</sub> он-						
-345±12				TDEq		84BUR/KUD

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		AH <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
HMg <sup>-</sup> MgH <sup>-</sup>						
•	1.05±0.06			PD		77RAC/FEL
HMn-			······			
MnH <sup>-</sup> * 172 <sup>b</sup>	0.000.0010			7 DEG	$\Delta_f H(A) = 256$	79HUB/HER
1/2	0.869±0.010			LPES		83STE/FEI
HM <sub>0</sub> O <sub>4</sub>					$\Delta_f H(AH) = -887 \pm 21$	82TN270
HMoO <sub>4</sub> <sup>-</sup> -1055±61 <sup>a</sup>		1362±40		TDEq	$e^- + H_2MoO_4 = HMoO_4^- + H$	79MIL
HN-	<del> </del>				$\Delta_f H(AH) = 189 \pm 1$	85GIBIGRE
NH-					BDE(A-H)= 406±18	85JANAF
* 340±21 <sup>a</sup>	0.381±0.014	1682±20 <sup>e</sup>	1653±21 <sup>h</sup>	LPES	See also 85NEU/LYK	76ENG/LIN
	0.380±0.030			LPES		74CEL/BEN
HNO-						
HNO-					$\Delta_f H(A) = 100 \pm 4$	82BAU/COX
* 68±6 <sup>b</sup>	0.338±0.015		. 1400	LPES		83ELL/ELL
			>1498	IMRB		77SUL
DNO-						
DNO-						
*	0.330±0.015			LPES		83ELL/ELL
HNO <sub>3</sub> -						
HNO <sub>3</sub>					$\Delta_f H(A) = -135$	82TN270
-190±15 b				NBIP		76MAT/ROT2
	0.6±0.2			EnCT		82PAU/DAL
HN <sub>2</sub> O-						
HN=NO						
<247					RONO + NH <sub>2</sub> <sup>-</sup> →	81KIN/MAR
< 130±21				IMRB	CH <sub>2</sub> =N <sup>-</sup> + N <sub>2</sub> O →	85KAS/DEP
HN <sub>2</sub> O <sub>4</sub> -						
HONO·NO <sub>2</sub>	<del>-</del>				•	
* -405±22 <sup>c</sup>		136±4		TDAs		80LEE/KEE
HN <sub>2</sub> O <sub>6</sub> -						
HNO <sub>3</sub> ··NO <sub>3</sub>	-					
* -545±10 <sup>c</sup>		103±8	87±7	TDEq		77DAV/FEH
HNi <sup>-</sup>						
NiH <sup>-</sup>						
•	0.481±0.007			LPES		87MIL/FEI
но-					$\Delta_f H(AH) = -242$	82TN270
но-					BDE(A-H)= 499	85JANAF
* -137 <sup>a</sup>	1.828	1635 <sup>e</sup>	1607±1 <sup>h</sup>	LPD	Given: 1.827670(21) eV	82SCH/MEA
	1.825±0.002			LPD		74HOT/PAT

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$	EA(A)	ΔH <sub>acid</sub> (AH)	ΔG <sub>acid</sub> (AH)	Method	Comment	Reference
$\Delta_{f}H(X \cdot \cdot Y^{-})$		H <sub>aff</sub> (X··Y¯)	$\Delta G_{aff}(X \cdot Y)$	Memod	Comment	Reference
HO-					$\Delta_f H(AH) = -242$	82TN270
HO <sup>-</sup>					BDE(A-H)= 499	85JANAF
	1.829±0.010			LPES		74CEL/BEN
	1.83±0.04			PD		66BRA
	1.8±0.2			EIAP	From MeOH, EtOH, nPrOH	64TSU/HAM
•	1.9±0.1			SI		69PAG/GOO
00-					$\Delta_f H(AH) = -249$	82TN270
DO-		_	•		$BDE(A-H) = 504 \pm 1$	82TN270
-139±1 <sup>a</sup>	1.826	1640±1 <sup>e</sup>	1615±1 <sup>h</sup>	LPD	Given: 1.822549(37) eV	82SCH/MEA
	1.823±0.002			LPD		74HOT/PAT
HO <sub>2</sub> -					$\Delta_f H(AH) = -136 \pm 1$	82TN270
ноо-		_			$BDE(A-H) = 365\pm3$	82TN270
* -94±10 <sup>a</sup>	1.08±0.12 <sup>d</sup>	1573±9 g	1542±8	IMRE		81BIE/SCH
•	1.078±0.017			LPES		850AK/HAR
	1.9±0.1			Ther	From a solution phase thermodynamic cycle	80BEN/NAN
	1.19±0.01		1536±12	IMRE		81BIE/SCH
DO <sub>2</sub> -						
D00-	1 000 . 0 017			LPES		OSO A VAIAD
	1.089±0.017			Lres		850AK/HAR
HO <sub>2</sub> S <sup>-</sup>						
HSO <sub>2</sub> -415 <sup>c</sup>		264±67 <sup>g</sup>	238±67	IMRB		85LAH/HAY
						- OZMIJIMI
HO <sub>3</sub> S⁻ so <sub>2</sub> ··oн⁻						
<-802 °		> 368		IMRB	$CO_2 \cdot \cdot HO^- + SO_2 \rightarrow$	84HIE/PAU
HO <sub>4</sub> S <sup>-</sup> HSO <sub>4</sub> <sup>-</sup>					$\Delta_f H(AH) = -735 \pm 8$	85JANAF
<-953±17 <sup>a</sup>	l	<1312±8	<1281±10 h	EIAP	From H <sub>2</sub> SO <sub>4</sub> (Appearance Potential = 0eV)	86ADA/SMI
7 755117	4.5 d	<131216 <1320 g	<1289		I + H <sub>2</sub> SO <sub>4</sub> →	80VIG/PER
			~ 120/			
HO <sub>4</sub> W <sup>-</sup> HWO <sub>4</sub> -				Á	$\Delta_f H(AH) = -906 \pm 4$	85JANAF
-1084±46 <sup>a</sup>		1352±41	1322±48 h	TDEq	$H_2WO_4 + e^- = HWO_4^- + H$ measured	70JEN/MIL
				-	$\Delta_f H(AH) = 139 \pm 3$	86BERICUR
HP-					BDE(A-H)= 315±11	86BERICUR
HP- PH-				LPES		76ZIT/LIN
	1.028±0.010	1528±9 <b>c</b>				
PH-	1.028±0.010 1.00±0.06	1528±9 <sup>c</sup>		PD		77RAC/FEL
		1528±9 <b>e</b>			From PH <sub>3</sub>	77RAC/FEL 69HAL/PLA
PH <sup></sup> • 137±12 <sup>a</sup>	1.00±0.06	1528±9 <sup>c</sup>		PD	From PH <sub>3</sub>	
PH <sup>-</sup> · • 137±12 <sup>a</sup> 218±18	1.00±0.06 > 0.5±0.2	1528±9 <sup>c</sup>		PD EIAP	From PH <sub>3</sub> $\Delta_f H(AH) = -21\pm 1$	69HAL/PLA
PH <sup>-</sup> · • 137±12 <sup>a</sup> 218±18	1.00±0.06 > 0.5±0.2	1528±9 <sup>c</sup>		PD EIAP		69HAL/PLA 64EBI/KRA
PH <sup>-</sup> · • 137±12 <sup>a</sup> 218±18	1.00±0.06 > 0.5±0.2	1528±9 <sup>c</sup>	1443±8	PD EIAP	$\Delta_f H(AH) = -21 \pm 1$	69HAL/PLA 64EBI/KRA 82TN270
PH <sup>-</sup> · • 137±12 <sup>a</sup> 218±18  HS <sup>-</sup> HS <sup>-</sup>	1.00±0.06 >0.5±0.2 <1.1		1443±8 1443±3 <sup>h</sup>	PD EIAP IMRB	$\Delta_f H(AH) = -21 \pm 1$	69HAL/PLA 64EBI/KRA 82TN270 82TN270

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Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
HS-					$\Delta_f H(AH) = -21 \pm 1$	82TN270
HS-					$BDE(A-H) = 381 \pm 1$	82TN270
	2.302±0.00	1		LPD		74EYL/ATK
	2.32±0.01			PD		68STE
-69	2.2 i			Endo		76REF
	2.30±0.04			SI		69PAG/GOO
			1453±8	IMRE		79BAR/SCO
HSe <sup>-</sup>					$\Delta_f H(AH) = 30\pm 8$	82TN270
HSe <sup>-</sup>					$BDE(A-H) = 368 \pm 19$	72DON/LIT
* -34±28 <sup>a</sup>	2.213	1466±19 <sup>e</sup>	1440±19 <sup>h</sup>	LPD		86STO/LAR
	2.21±0.03			PD		72SMY/BRA3
		1434±38 g	1407±38	IMRB	Between H <sub>2</sub> S, HCl	72DIX/HOL
HSi-			<del> </del>		$\Delta_f H(AH) = 237 \pm 16$	81DON/WAL
SiH"·					BDE(A-H)= 353±8	81DON/WAL
* 249±3 b	1.277±0.009	)		LPES		75KAS/HER
HTe <sup>-</sup>					$\Delta_f H(AH) = 100 \pm 2$	82TN270
*	2.102±0.015	;		LPES		86FRE/SNO
HZn-						
ZnH <sup>-</sup>						
	< 0.9			PD		77RAC/FEL
H <sub>2</sub> IO <sup>-</sup>						
HOH··I <sup>™</sup>						
* -472 <sup>c</sup>		42±4	23±9	TDAs		84CAL/KEB
		46	22±1	TDAs		80KEE/CAS2
		43±8	23±8	TDAs		70ARS/YAM
H <sub>2</sub> Mn <sup>-</sup>						
MnH <sub>2</sub>						
	0.444±0.016			LPES		86MIL/FEI
D <sub>2</sub> Mn <sup>-</sup>						
MnD <sub>2</sub>						
•	0.465±0.014			LPES		86MIL/FEI
H <sub>2</sub> N <sup>-</sup>			****		$\Delta_f H(AH) = -46$	82TN270
NH <sub>2</sub>					$BDE(A-H) = 449\pm3$	82TN270
* 113±4 <sup>a</sup>	0.75±0.06 <sup>d</sup>	1689±3 g	1657±3	IMRE		76MAC/HEM
•	0.776±0.037			LPES		74CEL/BEN
	0.744±0.022			LPD		72SMY/BRA2
	0.740±0.030			LPD		71SMY/MCI
	0.76±0.04			PD		71FEL
49±19					From NH <sub>3</sub>	68COL/HUB
	1.1			SI		69PAG/GOO

Table 2. Negative Ion Table - Continued

		Table	2. Negative 10	- Table	Continued	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
H <sub>2</sub> NO <sub>3</sub> -						
HOH··NO <sub>2</sub>						
* -494 <sup>c</sup>		64	34±1	TDAs		80LEE/KEE
		60±8	33±8	TDAs		71PAY/YAM
			34±24	Endo		82PAU/DAL
431 <sup>c</sup>	2.850			LPD		79SMI/LEE2
H <sub>2</sub> NO <sub>4</sub> - HOH··NO <sub>3</sub> -						
• -610 °		61±1	30±1	TDAs		80LEE/KEE
		52±8	28±8	TDAs		71PAY/YAM
H <sub>2</sub> NO <sub>4</sub> - HOOH··NO <sub>2</sub>	_	1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0				<del> </del>
-410±15 °	2	85±4	60±4	TDEq	Relative to HOH··NO <sub>2</sub> -, 80KEE/LEE	84BOH/FAH
H <sub>2</sub> NO <sub>5</sub> <sup>-</sup> ноон⋯NO <sub>3</sub>	_					······································
* -524±6 °	)	80±4	54±4	TDEq	Relative to HOH··NO <sub>3</sub> , 80KEE/LEE	84ВОН/ГАН
H <sub>2</sub> NS <sup>-</sup>						
2		1493±16 <sup>g</sup>	1467±13	IMRB		81DEP/BIE
				12OH and	H <sub>2</sub> S, comparable to MeSH	
			1480±13		NH <sub>2</sub> <sup>-</sup> + COS →	84BIE/GRA
			1476±13	IMRBC		81DEP/BIE
H <sub>2</sub> Ni <sup>-</sup>						
*	1.934±0.00	8		LPES		86MIL/FEI
D <sub>2</sub> Ni <sup>-</sup>						
NiD <sub>2</sub>						
• -	1.926±0.00	7		LPES		86MIL/FEI
H <sub>2</sub> O <sup>-</sup>				<u> </u>		
но∙∙н⁻						
-34±17		287 <sup>k</sup>		IMRB		84DEK/NIB
H <sub>2</sub> O <sub>3</sub> <sup>-</sup> HOH··O <sub>2</sub> <sup>-</sup>						
• -361 °		77±8	52±8	TDAs		70ARS/KEB
402		7.20	49±8	IMRE		71PAR
H <sub>2</sub> P <sup>-</sup>				<del></del>	$\Delta_f H(AH) = 5\pm 2$	61GUN GRE
PH2 <sup>-</sup>					BDE(A-H)= 354±5	86BER/CUR
• 27±10 <sup>a</sup>	1.19±0.14 d	1 1552±8 g	1520±8	IMRE		79BAR/SCO
•	1.271±0.01			LPES		76ZIT/LIN
	1.25±0.03			PD		72SMY/BRA
	1.300±0.03	0		LPD		71SMY/MCI
		1524±19		EIAP		69HAL/PLA
<9±21 <sup>a</sup>	<1.4±0.3 d			EIAP		64EBI/KRA
						V 1

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Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
 Н <sub>2</sub> Р-					$\Delta_f H(AH) = 5 \pm 2$	61GUN GRE
PH2 <sup>-</sup>					BDE(A-H)= 354±5	86BERICUR
	1.6			SI		69PAG/GOO
			1519±8	IMRE		79BAR/SCO
H <sub>2</sub> Si <sup>-</sup>					$\Delta_f H(AH) = 203\pm6$	87BOO ARM
SiH <sub>2</sub>					BDE(A-H)= 304±15	87BOO ARM
* 181±10 b	1.123±0.022	1508±17 <sup>e</sup>		LPES		75KAS/HER
H <sub>3</sub> O <sup>-</sup>						
нон∙∙н-						
-169±17		72±21 <sup>k</sup>			HOH··HO <sup>-</sup> + H <sub>2</sub> →	84PAU/HEN
-199±49				IMRB	H <sup>-</sup> + HCO <sub>2</sub> H →	83KLE/NIB
H <sub>3</sub> OSi <sup>-</sup>						
H <sub>3</sub> SiO						
<-107				IMRB	HO <sup>-</sup> + SiH <sub>4</sub> →	76PAY/TAN
H <sub>3</sub> O <sub>2</sub> -						
нон⊶он⊤						
* -479 <sup>c</sup>		100±8	78±8	TDAs		71PAY/YAM
*	2.9±0.2			PD		68GOL/STE
		112±4	84±7	TDEq		86MEO/SIE2
		94±8	71±8	TDAs		70ARS/KEB
		149±29		CIDT		70DEP/GIA
D <sub>3</sub> O <sub>2</sub> -		, ,				
DOD.OD-						
-491 <sup>c</sup>		112±3	84±5	TDAs		86MEO/SIE
H <sub>3</sub> O <sub>5</sub> S <sup>-</sup>						***************************************
HOH··HSO <sub>4</sub>	-					
		50±4	25±4	TDAs		84BOH/FAH
H <sub>3</sub> O <sub>6</sub> S-						
HOOH · · HSC						
-1156±22 <sup>c</sup>		67±4	45±4	TDEq	Relative to HOH··HSO <sub>4</sub> <sup>-</sup> , 84BOH/FAH	84BOH/FAH
H <sub>3</sub> P <sub>2</sub> -						
P2H3						
< 66				IMRB	PH <sub>2</sub> <sup>-</sup> + PH <sub>3</sub> →	72SMY/BRA
I <sub>3</sub> Si <sup>-</sup>					$\Delta_f H(AH) = 35\pm 2$	81BEUPER
SiH <sub>3</sub>					BDE(A-H)= 386±8	87BOO ARM
* 63±10 <sup>a</sup>	1.45±0.17 <sup>d</sup>	1558±8 g	1522±8	IMRE		79BAR/SCO
•	1.406±0.014	1562±10 <sup>e</sup>		LPES		86NIM/ELL2
	<1.440±0.03	0		LPD		74REE/BRA
486±10				EIAP		64EBI/KRA
			1519±8	IMRE <sup>0</sup>		79BAR/SCO

Table 2. Negative Ion Table - Continued

		****	2. Regative 10		Commuca	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
D <sub>3</sub> Si <sup>-</sup> SiD <sub>3</sub> <sup>-</sup>	1.386±0.0	122		LPES		86NIM/ELL2
H <sub>4</sub> N <sup>-</sup> · NH <sub>3</sub> ··H <sup>-</sup>	1.110±0.0	19		LPES		87SNO/COE3
	1.110±0.0	19		LPES		85COE/SNO
H <sub>5</sub> N <sub>2</sub> - NH <sub>3</sub> ··NH <sub>2</sub> - 16 °		50		PDis		87SNO/COE2
H <sub>5</sub> Si <sup>-</sup> SiH <sub>4</sub> ··H <sup>-</sup> 86 <sup>c</sup>		94±19		IMRE		86HAJ/SQU
H <sub>7</sub> N <sub>2</sub> <sup>-</sup> (NH <sub>3</sub> ) <sub>2</sub> ··H <sup>-</sup> -114 <sup>c</sup>	1.460±0.0	19		LPES		87SNO/COE3
H <sub>8</sub> N <sub>3</sub> <sup>-</sup> (NH <sub>3</sub> ) <sub>2</sub> ··NH <sub>2</sub>	- 1.780±0.0	19		LPES		87SNO/COE2
I- I- * -188±1 a	3.059	1315 <sup>e</sup>	1294±1 h	LOG	$\Delta_f H(A) = 107$	82BAU/COX 83WEB/MCD
IK <sub>2</sub> - K <sub>2</sub> I- -244±11				TDEq		84BUR/KUD
ILi <sup>-</sup> LiI <sup>-</sup> <-199 b	>1.1			EIAP	$\Delta_f H(A) = -91 \pm 8$ From (LiI) <sub>2</sub>	<i>85JANAF</i> 64EBI
IN <sup>-</sup> IN <sup>-</sup> · 96±21	1.3±0.2			Endo	$\Delta_f H(A) = 215$ $\Gamma + NO_2 \rightarrow$	<i>76REF2</i> 76REF2
IO <sup>-</sup> IO <sup>-</sup> <-66 -42±35 -79±21 -48 <-147	>2.5 i >2.1±0.3 2.6 i 2.3 i >3.3 i	i		Endo Endo Endo	$I^{-} + CO \rightarrow$ $I^{-} + O_{2} \rightarrow$ $I^{-} + O_{2} \rightarrow$ $I^{-} + SO_{2} \rightarrow$ $O^{-} + I_{2} \rightarrow$	77VOG/MIS 77VOG/DRE 76REF/FRA2 76REF/FRA 59HEN/MUC

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
os-						
ISO <sup>-</sup>						
-67				Endo	$I^- + SO_2 \rightarrow$	76REF/FRA
O <sub>2</sub> S <sup>-</sup>	· · · · · · · · · · · · · · · · · · ·		<u></u>			
$so_2 \cdot \cdot I^-$						
* -545±10 <sup>c</sup>		60±8	38±11	TDAs		85CAL/KEB
−539±2 <sup>c</sup>		54	37±1	TDAs		80KEE/LEE
s-						
IS-					$\Delta_f H(A) = 310$	76REFIFRA
47±29	2.7±0.3 <sup>i</sup>			Endo	$I^- + H_2S$ and $CS_2 \rightarrow$	76REF
2						
I <sub>2</sub> * -181 b					$\Delta_f H(A) = 62$	82BAU/COX
* -181 <sup>b</sup>	2.5±0.1			NBIP		73BAE/AUE
	1.72±0.05			NBIP	Vertical EA	76HUB/KLE
	2.3			ECD	Vertical EA: 1.7 eV	81AYA/WEN
	$2.4 \pm 0.2$			EnCT		73HUG/LIF
	2.4±0.1			NBIP		71MOU/ATE
	2.6±0.1			EIAP	From CHI <sub>3</sub>	71DEC/FRA
	2.6±0.1			EnCT	·	71CHU/BER
2K-						
KI··I⁻						
-483±8				TDEq		84BUR/KUD
<sub>2</sub> Sn <sup>-</sup>						
SnI2 <sup></sup>						
	1.7			EIAP	From SnI <sub>4</sub>	77PAB/PER
3						
I <sub>3</sub> -		<i>l</i> :		_		
-482		356 k	~	Latt		77FIN/GAT
<-207				IMRB		28HOG/HAR
			$I_2^- + I_2 \rightarrow$ ; Firs	t negative	ion/molecule reaction reported.	
3K2 <sup>-</sup>						
K <sub>2</sub> I <sub>3</sub>						
-760±15				TDEq		84BUR/KUD
3Sn-						
SnI <sub>3</sub>	2.01 - 0.04			T7T A T3	Provi Cul	MOD 4 TO 0 4 4 TO
	3.21±0.01 3.2			EIAP EIAP	From SnI <sub>4</sub> From SnI <sub>4</sub>	78PAB/MAR 77PAB/PER
			<del> </del>			
3Ti- Til3"					$\Delta_f H(A) = -150 \pm 33$	85JANAF

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Table 2. Negative Ion Table - Continued

	- <sub>f</sub> H(A¯) H(X··Y¯)		∆H <sub>acid</sub> (AH) H <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
In- In-	215±36 <sup>a</sup>		1508±28 <sup>c</sup>		PD	$\Delta_f H(A) = 244$	<i>82TN270</i> 85HOT/LIN
		0.8±0.2			EIAP	Prom InBr	80BRU/COT
Ir- 							
Ir <sup>-</sup>	514±3 <sup>b</sup>	1.565±0.008			LPES	$\Delta_f H(A) = 665 \pm 2$	<i>82TN270</i> 85HOT/LIN
K-			1				
K- •	41 <sup>b</sup>	0.501	1448±15 <sup>e</sup>	1428±17 <sup>h</sup>	LPD	$\Delta_f H(A) = 89$	<i>82TN270</i> 85HOT/LIN
KO <sub>4</sub> S	_				·		
KSO	4						
-	-992±11				TDEq		85RUD/SID2
Li <sup>-</sup> Li <sup>-</sup>						A L/Al- 101	00TN070
	101 <sup>a</sup>	0.618±0.001	1492 <sup>e</sup>	1470±1 <sup>h</sup>	LPD	$\Delta_f H(A) = 161$	<i>82TN270</i> 85HOT/LIN
Mo-				·····			
Mo	b					$\Delta_f H(A) = 658 \pm 2$	82TN270
•	586±3 b	0.746±0.010		1402±13	LPES IMRB		85HOT/LIN 85SAL/LAN
					<del></del>		
MoO <sub>3</sub> MoO						$\Delta_f H(A) = -362$	81W00
	655±40	2.58±0.41 i			TDEq	$H + HMoO_4^- = H_2O + MoO_3^-$	79MIL
4O-							
NO <sup>-</sup>	_			1.		$\Delta_f H(A) = 91$	82BAU/COX
•		2.4±0.010	1519±9 <sup>e</sup>	1492±10 <sup>h</sup>	LPES		72SIE/CEL
		0.1±0.1			ECD		83CHE/WEN
		2.0±0.1 0.0±0.1			CIDT		78TIE/WU
		0.0±0.1 0.7±0.2			NBIP Endo		77DUR/PAR
		2.500±0.007			ETS		76REF2 74BUR
		>0.1±0.1			NBIP		73NAL/COM
		1.5±0.1			EnCT		73HUG/LIF
		2.60±0.02			Kine		72PAR/SUG
		>6.0±0.1			EnCT		71CHA
		>9.0			EnCT		71BER/CHU
		0.0±0.2			NBIP		70LAC/HER
		>0.7±0.1				From NO <sub>2</sub>	69STO/COM
		0.8±0.1			EIAP	From EtONO, nBuONO	68WIL/HAM
		0.8 0.9			SI SI		69PAG/GOO 64FAR/PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
NOS-						
NSO <sup>-</sup>						
<-142			1414±21	IMRB	$NH_2^- + SO_2 \rightarrow$	84BIE/GRA
NO <sub>2</sub> -					$\Delta_f H(AH) = -80 \pm 8$	82BAU COX
NO <sub>2</sub> -					$BDE(A-H) = 331\pm9$	82BAU/COX
* -189±10 b	2.30±0.10	1421±18 <sup>e</sup>	1389±18 <sup>h</sup>	TDEq	, ,	87KEB/CHO
	2.359±0.100			LPES		74HER/PAT
	2.31±0.11			IMRE		85GRI/CAL
	2.1±0.2			ECD		83CHE/WEN
	2.350±0.100	)		LPD		79SMI/LEE2
	2.800±0.050	)		LPD		74RIC/STE
	< 2.6			IMRB		72FER/DUN
	2.4±0.1			CIDT		78TIE/WU
	2.1			EnCT		76REF2
	> 2.5±0.1			NBIP		73NAL/COM
	2.50±0.05			NBIP		73LEF/JAC
	2.3±0.1			IMRB		73HUG/LIF
	2.38±0.06			IMRB		72DUN/FEH
	2.5±0.1			NBIP		72BAE
	1.8±0.2			NBIP		77DUR/PAR
	< 3.9			PD		71MIL/JAC
	2.0			EnCT		71BER/CHU
	2.3±0.1			EnCT		70LIF/HUG
	2.1±0.2			IMRB		69VOG
9±29					$CO_3^- + NO \rightarrow [isomer?]$	70ADA/BOH
	3.10±0.05			PD		69WAR
	3.9±0.2			EIAP	From MeNO <sub>2</sub> , EtNO <sub>2</sub>	64TSU/HAM
	>3.8			IMRB	2, 2	62CUR
	1.800±0.050	ı		LPD		74RIC/STE
	4.0			SI		64FAR/PAG
103 <sup>-</sup>					$\Delta_f H(AH) = -135$	82BAU/COX
NO <sub>3</sub>					$BDE(A-H) = 424\pm21$	77DAM FEH
* -307±1 a	3 02±0 24 i	1358±1	1330±1	TDEq	DDL(A-1) - 424±21	77DAV/FEH
-50721	3.7210.24	133611		•	ed with current HBr acidity	HDATIFEII
		1358±2	relative to 11b1,	TDEq	ca will carroll fibr acidity	72FER/DUN
		1371±24		_	I <sup>-</sup> + HNO <sub>3</sub> →	76REF/FRA3
		1371±24 1380±20			From HNO <sub>3</sub>	76MAT/ROT2
	3.70±0.20	1300220			$NO_3^- + NO = NO_2^- + NO_2$	72MCF/DUN
	J. 10±0.20	1491		Endo	1103 THO #1102 THO2	72MCF/DUN 71BER/CHU
<-10		1421			$O_4^- + NO \rightarrow NO_3^- + O_2$ ; isomer?	
-135±21 <sup>c</sup>		276±21		PDis	04 4 110 7 1103 4 02; Isollier?	70ADA/BOH 78SMI/LEE
-133121		< 193		PDis	isomer: O <sub>4</sub> <sup>-</sup> + NO →	79SMI/LEE2
O <sub>4</sub> S <sup>-</sup>					·	
$SO_2 \cdot NO_2$		400 4	(2.1	TTT 4 -		ממצות מינים
* -594±12 <sup>c</sup>		108±1	62±1	TDAs	Detection to HOLL NO E COMPANY DE	80KEE/LEE
		102±4	62±4	IDEd	Relative to HOH··NO <sub>2</sub> , 80KEE/LEE	84BOH/FAH

Table 2. Negative Ion Table - Continued

			2. Negative for		100-100-100-100-100-100-100-100-100-100	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
NO <sub>5</sub> S <sup>-</sup> SO <sub>2</sub> ··NO <sub>3</sub> <sup>-</sup> * -676±11 °		72±8 76±5	40±8 37±4	TDEq TDAs	Relative to HOH··NO3 <sup>-</sup> , 80KEE/LEE	84BOH/FAH 83WLO/LUC
NS <sup>-</sup>				·		
NS*	1.194±0.01	1		LPES		82BUR/FEI
N <sub>2</sub> O <sup>-</sup>						
N <sub>2</sub> O <sup></sup>	22.24	k		arn.m	$\Delta_f H(A) = 82$	82BAUICOX
61±10 <sup>b</sup> 67±12 <sup>c</sup>	0.2±0.1 0.2±0.1 <sup>i</sup>	47±12 <sup>k</sup> 41±10		CIDT	Vertical detachment: -2.23±0.20 eV	78TIE/WU 76HOP/WAH
0,112	0.210.1	41110		CIDI	Vertical detachment 2.23±0.20 e v	73NAL/COM
	0.3±0.2			ECD		71WEN/CHE
	0.760±0.100	0		LPES	Vertical detachment	86COE/SNO
$N_2O_2^ N_2 \cdot \cdot O_2^-$				· · ·		
>-99 c		<57		IMRB	$N_2 \cdot O_2^- + O_2 \rightarrow O_4^-$	70ADA/BOH
$ \begin{array}{c}                                     $		· · · · · · · · · · · · · · · · · · ·				
>-17 <sup>c</sup>		< 57		IMRB	$N_2O \cdot \cdot O_2^- + O_2 \rightarrow O_4^- + N_2O$	70ADA/BOH
N <sub>3</sub> -			***************************************		$\Delta_f H(AH) = 294 \pm 2$	82TN270
N3 <sup>-</sup>				D-EA	BDE(A-H)= 387±21	
• 202_15 B	2.762±0.043			LPD		85ILL/COM
• 203±15 <sup>a</sup>	2.7±0.1 >2.540	1439±13 g	1414±12	IMRB	Acidity near HCO <sub>2</sub> H	81PEL/JAC
199±29	3.1±0.3 i	1418±21 <sup>f</sup>		LPES EIAP	From MeN <sub>3</sub> and HN <sub>3</sub>	76ENG/LIN 58FRA/DIB
 N <sub>3</sub> O <sub>2</sub> -						<del></del>
$N_2O \cdot \cdot NO^-$						
151±18 b	0.258±0.009	) 19 <sup>k</sup>		LPES		87COE/SNO
N <sub>4</sub> O <sub>2</sub> -						
$(N_2O)_2^-$						
	0.950±0.100	) 		LPES		86COE/SNO
N <sub>5</sub> O <sub>3</sub> -						
$(N_2O)_2 \cdot NO^2$		b		•		
213±18 °	0.513±0.022	2 19 <sup>k</sup>	· · · · · · · · · · · · · · · · · · ·	LPES		87COE/SNO
Na <sup>-</sup>					$\Delta_f H(AH) = 130$	82TN270
Na -			t.		$BDE(A-H) = 195\pm1$	85JANAF
• 54±1 b	0.548	1455±1 °	1434±3 <sup>h</sup>	LPD		85HOT/LIN
Nb-						
Nb <sup>-</sup>	0.000 0.00				$\Delta_f H(A) = 733 \pm 8$	85JANAF
• 647±11 b	0.893±0.025	•		LPES		85HOT/LIN

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Table 2. Negative Ion Table - Continued

Table 2. Negative foil Table - Continued							
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference	
Ni <sup>-</sup>							
Ni <sup>-</sup> * 318±3 b	1.156±0.0	10		LPES	$\Delta_f H(A) = 430 \pm 2$	<i>82TN270</i> 85HOT/LIN	
0-					$\Delta_f H(AH) = 39\pm 1$	85JANAF	
0-			h		$BDE(A-H) = 428 \pm 1$	85JANAF	
* 108±2 <sup>a</sup>	1.461 1.462	1599±1 <sup>e</sup>	1574±2 <sup>h</sup>	LPD LPD	Given: 1.461122(3) eV	85NEU/LYK 85HOT/LIN	
OP-	·						
OP-					$\Delta_f H(A) = -33 \pm 13$	83PEDIMAR	
• -139±14 <sup>b</sup>	1.092±0.01	10		LPES		76ZIT/LIN	
OS-							
so					$\Delta_f H(A) = 5 \pm 1$	85JANAF	
* -100±6 b	1.09±0.05	i		PD		70FEL	
-111	1.12±0.01	•		Endo	I + SO <sub>2</sub> →	76REF/FRA	
	> 1.2±0.1			EIAP EIAP	From SO <sub>2</sub> From SO <sub>2</sub>	73HAR/FRA 72THY	
	<1.1			IMRB	110111 30 <sub>2</sub>	61KRA/MUL	
	<1.1			IMRB	EA: < SO <sub>2</sub>	59HEN/MUC	
-100	1.2			EIAP	From SO <sub>2</sub>	58REE/DIB	
OS <sub>2</sub> -							
s <sub>2</sub> o-					$\Delta_f H(A) = -53$	86NIM/ELL	
* -234±1 b	1.877±0.00	8		LPES		86NIM/ELL	
OSe <sup>-</sup>			<del>'.  </del>				
SeO <sup></sup>					$\Delta_f H(A) = 53$	82TN270	
* -87±2 <sup>b</sup>	1.456±0.02	20		LPES	•	86COE/SNO2	
OTe-				<del></del>			
TeO-					$\Delta_f H(A) = 69 \pm 21$	83PED MAR	
	1.697±0.02	2		LPES	•	86FRE/COE	
O <sub>2</sub> • -42±1 b					$\Delta_f H(AH) = 10\pm8$	82TN270	
02					$BDE(A-H) = 206\pm8$	82TN270	
• -42±1 b	0.440±0.00		1449±9 <sup>h</sup>	LPES	•	72CEL/BEN	
	0.430±0.03	0		LPES		71CEL/BEN	
	0.45±0.05			ECD		83CHE/WEN	
	0.4±0.1				From O <sub>2</sub>	78TIE/WU	
	0.4±0.1 0.45±0.02			NBIP		77DUR/PAR	
	0.45±0.02 0.5±0.1			ETS NBIP	_	74BUR	
	> 0.5±0.1			EnCT	8	72BAE 71TTE/HUG	
	0.46±0.05			NBIP		71NAL/COM	
	>0.6±0.1			EnCT		71CHA	
	>0.5			EnCT		71BER/CHU	
	1.12±0.07			IMRB		70VOG/HAU	
	0.5±0.2			NBIP		70LAC/HER	
	> 1.3±0.2			EnCT		70BAI/MAH	
	>1.1±0.1			EIAP	From NO <sub>2</sub>	69STO/COM	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
O <sub>2</sub> - O <sub>2</sub>					$\Delta_f H(AH) = 10\pm 8$	82TN270
o <sub>2</sub>					BDE(A-H)= 206±8	82TN270
	0.43±0.02			Kine		66PAC/PHE
	0.15±0.05			PD		58BUR/SMI
O <sub>2</sub> P <sup>-</sup> .						
PO <sub>2</sub>					$\Delta_f H(A) = -280 \pm 2$	85JANAF
-645±18	3.80±0.22 <sup>i</sup>			TDEq		86RUD/VOV
−569 b	3.00			IMRE		79WOR/KOB
O <sub>2</sub> S <sup>-</sup>			·-			
so <sub>2</sub> -					$\Delta_f H(A) = -297 \pm 1$	85JANAF
• -403±2 b	1.107±0.008			LPES	·	86NIM/ELL
	1.097±0.036			LPES		74CEL/BEN
	1.00±0.05			PD -		70FEL
	1.1			EnCT		76REF/FRA
	1.1±0.2			NBIP		75ROT/TAN
	1.0±0.1			EnCT		73HUG/LIF
	1.1±0.1			IMRB	Between NH <sub>2</sub> -, C	61KRA/MUL
O <sub>2</sub> Se <sup>-</sup>					-	
SeO <sub>2</sub>	1.823±0.040			LPES		87SNO/COE
O <sub>2</sub> Te <sup>-</sup> TeO <sub>2</sub> <sup>-</sup>			<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>			
1002	> 2.200			LPES		87SNO/COE
O <sub>3</sub> -						
O <sub>3</sub> -					$\Delta_f H(A) = 143 \pm 2$	82TN270
* -60±2 b	2.103±0.003			LPES		79NOV/ENG
	1.9±0.1			PD		71WON/VOR
-66 <sup>c</sup>	2.2±0.4 i	174±19		PDis		
-66 <sup>c</sup>	2.210.4			CIDT		78SMI/LEE
>-99 <sup>c</sup>	2.06±0.06 i	174±5				78LIF/WU
-66 c	2.06±0.06 ·	< 207		PDis	England states 01 LT	78COS/MOS
-00 -		174±10			Excited state: 81 kJ up	77WU/TIE
	>1.8			IMRB		77DOT/DAV
	2.1±0.2			NBIP	<b></b>	75ROT/TAN
	>2.0			EnCT	I <sup>-</sup> + O <sub>3</sub> →	71BER/CHU
O <sub>3</sub> P-					$\Delta_f H(AH) = -565 \pm 63$	85HEN VIG
PO <sub>3</sub>	<b>.</b>				BDE(A-H) = 456±167	85HEN VIG
-943±16	4.49±0.53 <sup>i</sup>		<b>š</b>	TDEq		86RUD/VOV
-993±23				TDEq		83SID/RUD
<-772±78 <sup>8</sup>		<1323±15 g	<1293±13	IMRB		85HEN/VIG
<b>-</b> 795	3.5	*** ***		IMRB		79WOR/KOB
O <sub>3</sub> Re <sup>-</sup>			<del></del>			
ReO3 <sup></sup>	•				$\Delta_{f}H(A) = -284 \pm 21$	75GOU  MIL
-574±40	3.01±0.43 <sup>i</sup>			TDEq		75GOU/MIL
	> 2.5			IDE		/3GOO/MIL

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
O <sub>3</sub> S-						
SO <sub>3</sub>					$\Delta_f H(A) = -396 \pm 1$	82TN270
-560±15 b	1.7±0.2			NBIP		75ROT/TAN
-601±8				TDEq		85RUD/SID2
O <sub>3</sub> W <sup>-</sup>						
wo <sub>3</sub>					$\Delta_f H(A) = -293$	81W00
-698±40	3.64±0.41 <sup>i</sup>			TDEq	$HWO_4^- + H = WO_3^- + H_2O$	70JEN/MIL
	> 2.5			IMRB		72CEN
D <sub>4</sub> -						<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>
$O_2 \cdots O_2^-$						
−194 <sup>c</sup>	2.0±0.2 <sup>i</sup>	151±19		PDis		78SMI/LEE
	1.9±0.2			PD		72BUR2
-99 °		57±1	17±1	TDAs		68CON/NES
			17±2	IMRE		71PAR
		< 77±8		IMRB		70ADA/BOH
			$O_4^- + H_2O \to 0$	о <sub>2</sub> н <sub>2</sub> о	O + O <sub>2</sub> , anchored on 70ARS/KEB	
) <sub>4</sub> Re <sup>-</sup> ReO <sub>4</sub> <sup>-</sup>		-			$\Delta_f H(AH) = -665 \pm 42$	82TN270
-976±30				TDEq		03610/0110
	4.46±0.52 i	1328±40		=		83SID/RUD
-607102	> 2.5	1320140		TDEq IMRB		75GOU/MIL 72CEN
			·			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
0 <sub>4</sub> S <sup>-</sup> so <sub>4</sub>						
-744±10				TDEq		85RUD/SID2
\ C =						
$S_2^-$ $SO_2 \cdot \cdot SO_2^-$						
-801±4 c		100±1	58±2	TDAs		80KEE/LEE
<del></del>						
5S2-						
$so_2 \cdot \cdot so_3$						
-912±17 <sup>c</sup>		56	32±1	TDAs		80KEE/LEE
-					$\Delta_f H(AH) = 236\pm8$	86BERICUR
P-					BDE(A-H)= 298±10	85JANAF
* 244±1 b	0.747	1538±10 <sup>e</sup>	1514±10 <sup>h</sup>	LPD		85HOT/LIN
±7171±1Å	0.77±0.05	200210	av a7442V		From P <sub>4</sub>	74BEN/MAR
	J., , <u>1</u> 0.03			-11.11	•••••••	HDENWAR
2					A 11/A) - 444 A	
P2 -					$\Delta_f H(A) = 144 \pm 2$	85JANAF
* 88±5 b	0.589±0.025			LPES		85SNO/COE
	< 0.7			PD		77FEL/RAC
	0.2±0.2			EIAP	From P <sub>4</sub>	74BEN/MAR
156±20						
			· ···· · · · · · · · · · · · · · · · ·			
156±20 					$\Delta_{f}H(A)=249\pm17$	74BENIMAR

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{ m acid}(AH)$ $\Delta G_{ m aff}(X \cdot \cdot Y^-)$	Method		Comment	Reference
Pb <sup>-</sup> Pb <sup>-</sup> 160±3 b	0.364±0.00	98		LPES	$\Delta_f H(A) =$	195±2	<i>82TN270</i> 85HOT/LIN
d- Pd- * 325±3 b	0.557±0.00	18		LPES	$\Delta_f H(A) =$	378±2	<i>82TN270</i> 85HOT/LIN
t <sup>-</sup> Pt <sup>-</sup> • 360±2 b	2.128±0.00	2		LPD	$\Delta_f H(A) =$	565±2	<i>82TN270</i> 85HOT/LIN
b <sup>-</sup> Rb <sup>-</sup> * 34 <sup>b</sup>	0.486			LPD	Δ <sub>f</sub> H(A)=	81	<i>82TN270</i> 85HOT/LIN
e <sub>2</sub> - Re <sub>2</sub> -	1.571±0.00	8		LPES			86LEO/MIL2
h- Rh- * 447±3 b	1.137±0.00	8		LPES	$\Delta_f H(A) =$	557±2	<i>82TN270</i> 85HOT/LIN
S <sup>-</sup> 77 b	2.077	1467±5 °	1444±6 h	LPD	Δ <sub>f</sub> H(AH)= BDE(A-H):		<i>85JANAF 85JANAF</i> 85HOT/LIN
S <sub>2</sub> * -32±5 b <46±10	1.663±0.04 >0.8±0.1 i >2.5±0.8	0	s <sup>-</sup> + cos → s <sub>2</sub> <sup>-</sup>		$\Delta_f H(A) =$ Also $S_2^- + C$ From $CS_2$	$129\pm 1$ $COS \rightarrow S_3^- + CO, etc. to n = 6$	<i>85JANAF</i> 74CEL/BEN 68DIL/FRA 72THY
S <sub>3</sub> - -60±11 b	2.093±0.02 2.0±0.1	5	, , , , , , , , , , , , , , , , , , ,	LPES PD	$\Delta_f H(A) =$	142±8	85JANAF 86NIM/ELL 77FEL/RAC
Sb <sup>-</sup> 159±7 b	1.07±0.05			PD	$\Delta_f H(A) =$	262±2	<i>82TN270</i> 85HOT/LIN
Sc <sup>-</sup> * 360±6 b	0.188±0.020	)		LPES	Δ <sub>f</sub> H(A)=	378±4	<i>82TN270</i> 85HOT/LIN
Se <sup>-</sup> • 32 b	2.021			LPD	Δ <sub>f</sub> H(A)=	227	<i>82TN270</i> 85HOT/LIN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH <sub>acid</sub> (AH) ΔH <sub>aff</sub> (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
Se <sub>2</sub> - Se <sub>2</sub> - * -41±15 b	1.940±0.070	0		LPES	$\Delta_f H(A) = 146 \pm 8$	<i>82TN270</i> 87SNO/COE
Se <sub>3</sub> -	> 2.200			LPES		87SNO/COE
Si <sup>-</sup> Si <sup>-</sup> • 322±3 <sup>b</sup>	1.385±0.005	5 1475±11 <sup>e</sup>	1453±12 <sup>h</sup>	LPES	$\Delta_f H(AH) = 377\pm8$ $BDE(A-H) = 297\pm10$	85JANAF 82TN270 75KAS/HER
Sn <sup>-</sup> Sn <sup>-</sup> * 195±4 <sup>b</sup>	1.113±0.020 1.1±0.1	)		LPES PD	$\Delta_f H(A) = 302 \pm 2$	<i>82TN270</i> 86MIL/MIL 85HOT/LIN
Ta <sup>-</sup> Ta <sup>-</sup> * 751±1 <sup>b</sup>	0.322±0.012	2		LPES	$\Delta_f H(A) = 782$	<i>82TN270</i> 85HOT/LIN
Te- Te- • 6 b	1.971			LPD	$\Delta_f H(AH) = 143$	<i>79HUB HER</i> 85HOT/LIN
Te <sub>2</sub> - Te <sub>2</sub> - * -17±15 b	1.920±0.070	)		LPES	$\Delta_f H(A) = 168 \pm 8$	<i>82TN270</i> 87SNO/COE
Te <sub>3</sub> - Te <sub>3</sub> -	< 2.700			LPES		87SNO/COE
Ti <sup>-</sup> * 462±3 b	7.9±0.014	1460 <sup>f</sup>		LPES	$\Delta_f H(AH) = 532$	79HUB/HER 85HOT/LIN
TI- TI- * 163±20 b	0.2±0.2 1.1±0.2			PD EIAP	$\Delta_f H(A) = 182 \pm 1$ From TiBr	<i>82TN270</i> 85HOT/LIN 80BRU/COT
V <sup>-</sup> V <sup>-</sup> * 464±10 b	0.525±0.012	:	1389±13	LPES IMRB	$\Delta_f H(A) = 515\pm 8$	<i>85JANAF</i> 85HOT/LIN 85SAL/LAN
W⁻ * 772±7 b	0.815±0.008	3		LPES	$\Delta_f H(A) = 851 \pm 6$	<i>85JANAF</i> 85HOT/LIN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Y- Y- • 392±3 b	0.307±0.0	012		LPES	$\Delta_f H(A) = 421 \pm 2$	<i>82TN270</i> 85HOT/LIN
Zr <sup>-</sup> Zr <sup>-</sup> . • 569±10 b	0.426±0.	014		LPES	$\Delta_{f}H(A)=610\pm8$	<i>85JANAF</i> 85HOT/LIN

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